

**Exponent®**



**Follow-Up Study Report:  
Oral Bioavailability of  
Dioxins/Furans in Tittabawassee  
River Floodplain Soil**

Prepared for

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June 12, 2006

## **Appendix A**

### **Study Design Modifications for the Follow-Up to the Pilot Study of Oral Bioavailability of Dioxins/Furans in Midland Soil**



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Follow-Up to the Pilot Study of  
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Prepared for

The Dow Chemical Company

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# **Study Design Modifications for the Follow-Up to the Pilot Study of Oral Bioavailability of Dioxins/Furans in Midland Soil**

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## **Introduction**

This document describes a proposed study design for a follow-up to the pilot study of the oral bioavailability of dioxins and furans from Midland and Tittabawassee River flood-plain soils. The pilot study results showed statistically significant differences in hepatic EROD activity (a marker for cytochrome P450 1A1 induction) between the rats dosed with soils and their respective reference groups, with higher enzyme activity observed in the reference-group rats compared to the rats in the respective soil groups. This follow-up study is designed to repeat the pilot rat study, with study design modifications structured to allow an assessment of the possible impact of the differential enzyme induction on the estimation of relative bioavailability of these compounds from soil.

The observed differences in EROD activity were likely due to a difference in absorbed dose of dioxin and furan (PCDD/F) compounds (Figure 1). Rats in the corn oil reference groups received greater administered doses of PCDD/Fs than the soil/feed mixture groups, due to lower-than-expected consumption of feed by all rat groups (Table 1). In addition, the fraction of administered dose absorbed in the soil groups may have been  $\frac{1}{4}$  to  $\frac{1}{2}$  of the fraction absorbed from the corn oil gavage administration. The initial study utilized comparable corn oil and soil/feed mixture dosages of dioxins and furans, which did not take into account these two variables. The difference in EROD activity between the soil and reference groups is likely due to higher liver concentrations achieved due to higher absorbed doses of PCDD/Fs in the reference groups compared to the soil groups and resulting hepatic EROD activity.

CYP1A1 is involved in the metabolism of several of the key TCDD toxic equivalency (TEQ)-contributing compounds in the Midland and Tittabawassee River flood-plain soils, and induction of this enzyme can result in an increased rate of metabolism for these compounds. Because the method used to estimate relative bioavailability in this study relies on an assumption that the elimination rate (including elimination through metabolism and other clearance mechanisms) for each compound is the same in the soil and reference oil dose groups, demonstrated statistically significant differences in EROD activity among the groups may result in invalid estimates of relative bioavailability for any congener for which metabolism is mediated by CYP1A1. In the pilot study, estimates of relative bioavailability for many of the compounds in the study were statistically significantly different between the rats and the swine. The rats displayed different EROD activities in the soil and reference groups (while the swine did not); therefore, this factor may account for some of the observed differences in apparent relative bioavailability between the two species. Other factors related to differing tissue concentrations, including differential rates of passive elimination at different liver or body concentrations, could also lead to confounding of the interpretation of the initial pilot study results.

## Methods

This follow-up to the pilot study is designed to repeat the rat study of the Tittabawassee River flood-plain soil assessed in the pilot study. The pilot study design will be used, with key modifications designed to provide data to address the issues raised by differential EROD or MROD induction.

1. *Use of additional reference corn oil groups.* In the pilot study, the reference corn oil materials were prepared with concentrations of the key contaminants designed to result in a match to the *administered* dose of these compounds in the soil/feed mixture. In this follow-up study, the reference oil will be formulated at three doses in an attempt to bracket the anticipated *absorbed* dose of compounds from the soil/feed mixture. The purpose of this modification is to try to achieve reference corn oil dosed groups with hepatic TEQ concentrations that bracket and/or approximate the hepatic TEQ concentrations resulting from the consumption of the soil/feed mixture. This, in turn, should result in one or more reference corn oil groups with hepatic EROD and MROD activity similar to that in the soil/feed mixture group.
2. *Selection of reference corn oil dose levels.* No differential enzyme induction between experimental dose groups (reference corn oil groups vs. soil/feed groups) was observed in the swine study from either tested soil. The relative bioavailability estimates from the swine portion of the pilot study for the five tested furan compounds in the Tittabawassee River flood-plain soil ranged from a low of 0.22 for 2,3,7,8-TCDF to a high of 0.37 for 1,2,3,6,7,8-HxCDF, with a TEQ-weighted mean of 0.27. The relative bioavailability estimates in swine for the five key compounds in the Midland soil ranged from 0.18 for TCDD to 0.55 for 1,2,3,4,6,7,8-HpCDD, with a TEQ-weighted mean of 0.23 to 0.29, depending on the assumptions used for non-detectable compounds. These estimates provide a hypothesis for the level of relative bioavailability that may be observed in the absence of possible confounding from differential EROD activity. Based on this, the reference corn oil materials will be formulated to bracket the anticipated absorbed doses from the soil/feed mixture. Thus, reference corn oil mixtures will be formulated to achieve administered daily doses equal to 0.2, 0.5, and 0.8 times the administered doses in the soil/feed mixture. Because the same soils are being used as were used in the pilot study, the original reference corn oil mixture will serve as a fourth dosing level for assessment of dose-related changes in hepatic TEQ and EROD/MROD activity.
3. *Addition of undosed controls for hepatic EROD/MROD activity determination.* The relatively low levels of EROD activity observed in the pilot study raised questions on the part of the peer-review committee regarding the variability in control EROD activity. Non-simultaneous background-exposed animals from a previous phase of the project showed low levels of EROD activity, but no undosed controls were included in the pilot-study protocol. In this follow-up study, two undosed control groups (both groups fed clean feed, and one group administered corn oil gavage with no spiked dioxin or furan congeners) will be maintained for the 30-day study duration, and liver tissue will be collected at the end of the study. EROD and MROD activities will be measured in these control animals, to confirm the low activities observed in the earlier background study. These data will assist in interpreting the EROD/MROD activity data obtained from

dosed animals. Liver and adipose tissue concentrations in the each of the control rat groups (clean feed only and clean feed plus corn oil) will be measured in composited samples of livers and adipose tissues collected from five animals in each of these groups, to confirm the background tissue concentrations for use in EROD/MROD dose-response analysis.

Additional modifications unrelated to the differential EROD activity will be made based on the results of the pilot study, to streamline the study and respond to animal care issues raised in the first study:

1. In the pilot study, tissues were collected and homogenized from pairs of rats in order to collect large enough fat samples to achieve sufficiently low detection limits, to ensure detection of the administered compounds. The results of the pilot study demonstrated that the tissue concentrations (particularly in liver) in these animals easily exceeded detection limits for all congeners of relevance for both soils. For that reason, the follow-up study will analyze tissues (liver and fat) from five single animals per dose group, rather than five pairs of animals
2. Based on gavage-related mortality observed in the pilot study, seven (rather than five) rats will be included in each of the corn oil gavage groups during the compound administration phase of the study, to ensure that at least five animals reach the conclusion of the 30-day dosing period. At the end of the administration period, five rats will be selected at random from all surviving rats in each gavage group for tissue collection. Remaining rat carcasses will be frozen and stored, in case additional follow-up analyses are deemed necessary.

Tables 2 and 3 present a summary of the dose groups, dosing material analysis, and tissue analysis for the follow-up study.

As in the pilot study, the soil/feed mixture will be prepared at WIL Research. All analytical work, and the preparation of the reference corn oil dosing materials, will be conducted at Alta Analytical. Analysis of hepatic tissue samples for EROD and MROD activity will be conducted by Entrix. Animal husbandry and dosing will be conducted at the College of Veterinary Medicine at the University of Missouri—Columbia, under the direction of Dr. Stan Casteel. Other aspects of animal husbandry, diet, etc., will be conducted as described in the pilot-study report.

## Data Analysis

1. *Assessment of dose-dependence of elimination rate by congener.* Liver and adipose tissue concentration data from each animal in each of the three corn oil reference groups will be analyzed to estimate the fraction of total administered dose retained in the tissues at the end of the 30-day dosing period for each of the five target congeners. Data generated from the corn oil reference group from the original pilot study will also be included in this analysis. If there is no dose dependence of elimination rate for a given congener, the fraction of administered dose retained should be similar among all groups

regardless of administered dose. If the fraction of administered dose retained decreases with increasing administered dose, this provides evidence that the elimination rate of this congener is dose dependent in the range of doses examined.

2. *Evaluation of EROD/MROD activity as a function of hepatic TEQ.* EROD and MROD activities for all individual animals and dose groups will be plotted versus hepatic TEQ concentration. The liver-tissue concentration-response curves for EROD and MROD activity will be characterized (similar to Figure 1 of this document). The reference corn oil group(s) that provide the closest match to the EROD activity of the soil/feed group will be identified.
3. *Comparison of fraction of soil dose retained to initial pilot study.* Tissue retention and concentrations in the soil/feed mixture group will be compared to the results from the initial pilot-study Tittabawassee River flood-plain soil/feed mixture group to evaluate the degree to which the results are reproducible from experiment to experiment.
4. *RBA calculation.* The relative bioavailability of the contaminants from the soil/feed mixture will be estimated using the same calculation procedures outlined in the pilot-study report. However, these calculations will be presented based only on the one or two reference corn oil group(s) with hepatic TEQ and EROD activities that are most similar to those of the soil/feed mixture group, as identified in step 2 above.

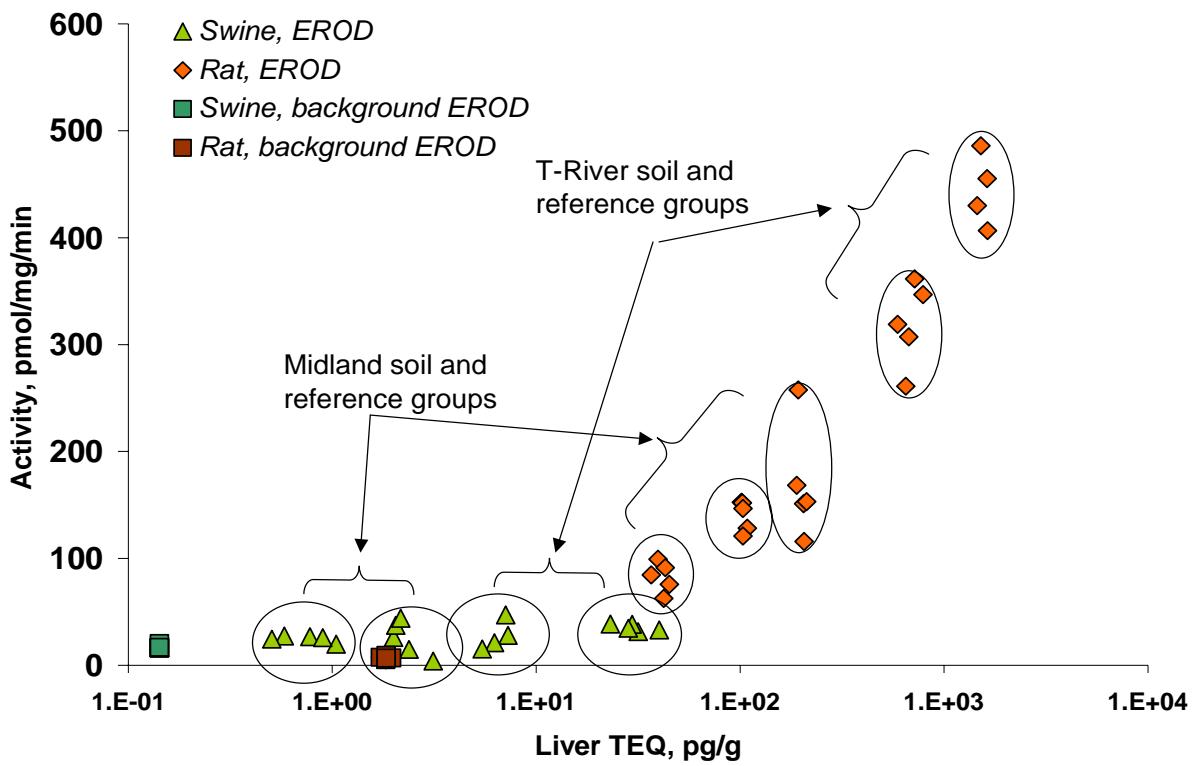


Figure 1. EROD activity as a function of liver TEQ concentration for the rat and swine experimental groups in the oral bioavailability pilot study. While the swine demonstrated no statistically significant differences in hepatic EROD activity between reference oil and soil groups, such statistically significant differences were observed in the rat groups, with reference oil and feed groups demonstrating elevated liver TEQ and EROD activity compared to soil groups for both soils. There was no overlap in the EROD activity or hepatic TEQ concentrations between soil and reference oil groups for either soil.

**Table 1. Comparison of administered doses and hepatic TEQ concentrations in rat study groups in initial pilot study**

<b>Dose Group</b>	<b>Admin. Dose (ng TEQ/kg-d)</b>	<b>Hepatic TEQ (pg/g)</b>	#-Fold Difference Compared to Soil Group	
			<b>Admin. Dose</b>	<b>Hepatic TEQ</b>
Midland Soil/Feed	0.6	41	--	--
Ref. Feed	0.7	104	1.2	2.5
Ref. Oil Gavage	1.0	201	1.7	4.9
T-River Soil/Feed	2.6	684	--	--
Ref. Oil Gavage	2.9	1556	1.1	2.3

**Table 2. Summary of dose groups for follow-up study**

<b>Group</b>	<b>Description</b>	<b>Number of Animals in Test</b>	<b>HR-GC/MS Analysis</b>		<b>EROD/MROD Analysis</b>
			<b>Liver</b>	<b>Adipose</b>	
FC	Feed control	5	1 <sup>a</sup>	1 <sup>a</sup>	5
GC	Corn oil gavage control	7	1 <sup>a</sup>	1 <sup>a</sup>	5
SF	Tittabawassee River soil/feed mixture, nominal daily dose rate Y	5	5	5	5
G1	Reference corn oil spiked at 0.2×Y	7	5 <sup>b</sup>	5 <sup>b</sup>	5
G2	Reference corn oil spiked at 0.5×Y	7	5 <sup>b</sup>	5 <sup>b</sup>	5
G3	Reference corn oil spiked at 0.8×Y	7	5 <sup>b</sup>	5 <sup>b</sup>	5
<b>Totals:</b>		<b>38</b>	<b>22</b>	<b>22</b>	<b>30</b>

<sup>a</sup> Liver tissue samples from five animals in each of the control groups will be collected and composited for HR-GC/MS analysis, to confirm liver tissue concentrations at background levels for use in EROD/MROD dose-response analysis.

<sup>b</sup> Five animals randomly selected from all remaining group animals at the end of the 30-day dosing period.

**Table 3. Summary of samples for HR-GC/MS analysis**

Sample Description	Number of Analyses
Soil/feed mixture, pre-test characterization, triplicate split sample for analysis	3 <sup>a</sup>
Soil/feed mixture, post-administration for confirmation of stability	1
Unspiked corn oil, pre-test confirmation of lack of dioxin/furan contamination	1
Reference corn oil solutions, pre-test characterization for confirmation of compound concentrations	3 <sup>a</sup>
Reference corn oil solutions, post-administration for confirmation of stability	3
Liver tissue samples, five each from four dose groups plus 1 composited liver tissue sample from each of the two control groups	22
Adipose tissue samples, five each from four dose groups	22

<sup>a</sup> These analyses will be requested on a “rush” basis, in order to prepare dosing solutions and feed mixtures in a compressed time frame.

## **Appendix B**

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### **WIL Research Report: Preparation of Diets for a Dietary Exposure Study with Dioxin-Contaminated Soils in Rats**

**PROJECT TITLE**

Preparation of Diets for a Dietary Exposure Study with a Dioxin-Contaminated  
Soil in Rats

**PROJECT NUMBER**

WIL-518002

**CONTRIBUTING SCIENTIST**

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## GENERAL CONSIDERATIONS

To my knowledge, there were no significant deviations from the intended scope of work or the Standard Operating Procedures of WIL Research Laboratories, LLC that would be expected to affect the scientific integrity of this study.



Daniel W. Sved, Ph.D.  
Director, Metabolism and  
Analytical Chemistry



Date

## PREPARATION OF DIETS FOR A DIETARY EXPOSURE STUDY WITH A DIOXIN-CONTAMINATED SOIL IN RATS

### 1. INTRODUCTION

WIL Research Laboratories, LLC was subcontracted by Exponent, Inc. to prepare a rodent diet containing 5% of a test soil and to provide additional basal rodent diet. Samples of the dietary admixture were sent to Alta Analytical Laboratory for analysis. The dietary admixture and basal diet were shipped to the Veterinary Medical Diagnostic Laboratory, University of Missouri-Columbia.

### 2. TEST MATERIALS

The following material was supplied to WIL Research Laboratories for use in preparing the dietary admixture.

#### A. Test Soil

The test soil was received from Exponent, Inc., Boulder, CO on November 9, 2005 and was assigned WIL Log No. 6705A. The material was labeled with the following information.

061804-SOI-02769-00.5  
Lot# DPW  
Sampling Site: THT02769 (IP-2)  
Sample Type Other <250 µm  
455 g  
Bottle Archive 3 of 3  
Tag No. 59512

### 3. BASAL DIET

The basal diet used for this project was PMI International, LLC Certified Rodent LabDiet 5001 (meal). Lot number OCT 26 05 1 was used for the dietary admixture, which was prepared on November 16, 2005; the remaining diet from this lot was shipped to the Veterinary Medical Diagnostic Laboratory, University of Missouri-Columbia.

### 4. MIXING PROCEDURE

A total batch size of 5 kg was prepared. The required amount of test soil, 250 g, was weighed into a tared vessel. A pre-mixture was prepared by transferring the test soil to a Hobart mixer containing 1000 g of basal diet and the

components were mixed for 5 minutes with the speed setting on 1. The pre-mixture was transferred to a V-blender along with the remaining amount of basal diet (3750 g) needed to achieve the total batch size. The components were mixed for 15 minutes using the intensifier bar for the first and last 5 minutes.

## **5. SAMPLE COLLECTION AND SHIPMENT**

Three samples (approximately 100 g each) of the dietary admixture were collected into plastic ziplock-type bags. Samples were collected from the initial (bottom), middle, and last (top) portions of the admixture as it was discharged from the V-blender. Samples were shipped under ambient conditions to Alta Analytical Laboratory using an overnight courier on November 16, 2005.

## **6. SHIPMENT OF DIETARY ADMIXES**

Upon receiving authorization from Exponent, the dietary admixture and remaining basal diets were shipped under ambient conditions to the Veterinary Medical Diagnostic Laboratory, University of Missouri-Columbia using an overnight courier. Additionally, the remaining basal diet (three boxes each containing 22.67 kg of lot number OCT 26 05 1) was also shipped.

## **7. DISPOSITION OF REMAINING TEST MATERIALS**

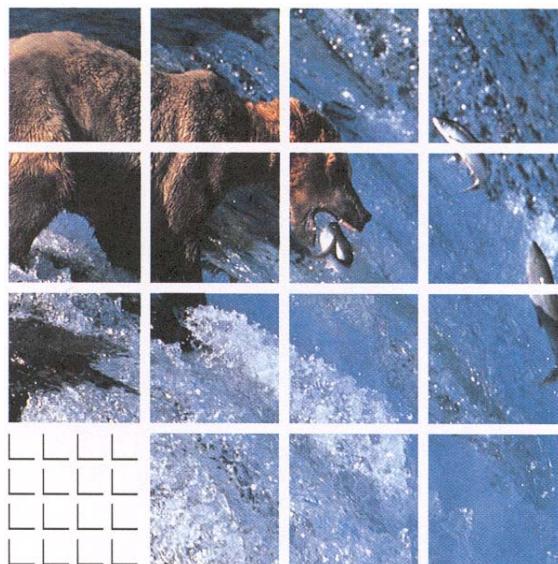
Following shipment of the dietary admixture, any remaining test soil was returned to the supplier.

## **Appendix C**

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### **Entrix Report**

**QUANTIFICATION OF EROD AND MROD ACTIVITIES IN RAT LIVER  
MICROSOMES: FEBRUARY 22, 2006 SAMPLES**



*Prepared for:*

**Exponent  
Colleen Cushing**

*Prepared by:*

**ENTRIX, Inc.**  
John L. Newsted, Ph.D.  
John P. Giesy, Ph.D.

March, 2006

## Overview

This interim report summarizes the results of the analysis of Ethoxyresorufin *O*-deethylase (EROD) and Methoxyresorufin *O*-demethylase activity in the liver microsomes of rats. Liver samples were collected from rats feed as part of a study to evaluate the bioavailability of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) from soils to organisms consuming soil. The protocols used to prepare liver microsomes and to measure both the protein levels and the enzymatic activities are outlined in the MSU-ATL SOP# 250, version 1.1 (Protocol for Liver Microsome Preparation and Microsomal Protein Measurement and AROD Assays in the same 96-Well Plate).

## Methods

Rat livers were collected on 2-22-2006, frozen in liquid nitrogen and shipped to Entrix for processing. Samples were received by Entrix on 2-23-2006 and immediately sent to Michigan State University-Aquatic Toxicology Laboratory and stored in liquid nitrogen until processed. The dates for the preparation of liver microsomes preparation are shown in Table 1.

**Table 1.** Rat liver samples and dates of Microsomal preparation for use in analysis of cytochrome P450 activities.<sup>a</sup>

Preparation Date	Rat Liver Samples
3/6/2006	14, 15, 17, 18, 20, 22
3/7/2006	23, 24, 26, 27, 29, 30, 32, 35, 36, 37, 38, 39
3/8/2006	40, 41, 42, 43, 44, 46, 47, 48, 50, 51, 53, 54

<sup>a</sup> Microsomes were processed and then stored at -80°C until EROD and MROD analysis

As outlined in SOP# 250, sets of proteins and resorufin standards were run with each microtiter plate to account for differences in assay conditions and instrumental performance. All Microsomal samples were thawed and stored on ice (4°C) prior to the start of the enzyme assays. All working solutions including resorufin standards, 7-ethoxyresorufin (7-ER) and 7-methoxyresorufin (7-MR) and NADPH solutions were prepared the day of the assay and stored on ice prior to use. Incubation conditions and enzymatic substrate concentrations for the rat EROD and MROD assays are given below:

Pre-incubation time: 10 min @ 37°C  
Incubation time: 10 min @ 37°C

Final Substrate Concentrations:

7-ER 2.5 μM  
7-MR 5.0 μM

Fluorescence Filter Settings:

AROD: Excitation -538 nm  
Emission - 590 nm  
Protein: Excitation - 355 nm  
Emission - 460 nm

EROD/MROD activities and protein concentrations were measured within the same wells in a 96-well plate. Protein concentrations were measured by a fluorometric method at the end of incubation time and differences between animals and replicates were taken into account during the analysis of the data. Fluorescence was measured with a Fluoroskan Ascent 2.5 multiplate reader (Thermo Electron Corp.) and the data was electronically collected and stored as an Excel file (\*.xls). Protein concentrations and enzymatic activities were calculated using Excel (Office 2003). In addition, all descriptive statistics were calculated in Excel. These files have been attached to this report in Appendices A (EROD) and B (MROD).

## **Results**

All rat liver samples were analyzed for EROD and MROD on 3-21-06 while proteins were determined on 3-22-06 (Table 2). For the EROD analyses, the intra-sample variability across all groups was relatively low and coefficients of variation (CVs) ranged from 0.63% to 7.52% with an average value of 3.06%. The intra-group variability for EROD was slightly greater than that observed for within samples and the CVs ranged from 15% to 22% with an average value of 18%. The variability observed in the MROD analyses was slightly greater than that observed in the EROD results. For MROD, the intra-sample CVs ranged from 0.38% to 8.2% with an average value of 5.0% across all samples. The intra-group variability was much greater than the intra-sample variability in that group CVs ranged from 17% to 46% and averaged 28% for all groups.

There was an increase in EROD activity when evaluated by groups with the least activity being observed in Group 1 while the greatest was observed in Group 5 where average EROD activities were 33.2 and 106 pmol/mg protein/min, respectively. The activity in Group 6 appeared to have reached a plateau and did not differ from that observed in Group 5 samples.

The general trend in MROD activity was similar to that observed for EROD where the least activities were measured in Groups 1 and 2 followed by an increase in activity up to a maximal level in samples from Group 5. There was approximately a 39% decrease in the measured MROD activity between Groups 5 and 6.

## **Conclusions**

Assays were conducted with microsomes prepared from rat livers to measure the activity of two cytochrome P450s, P450 1A1 (EROD) and P450 1A2 (MROD). The overall variability in EROD and MROD activity measured either on a sample basis or on a group was similar with intra-sample variability was on average, less than 5%. Intra-group as determined by differences in measured values within a group was greater than that observed within a sample and averaged approximately 18% and 28% for EROD and MROD, respectively. Activity of both enzymes increased across the groups with the least enzymatic activity being observed in Group 1 rats and the greatest activity being observed in Group 5 rats. For Group 6 rats, EROD activity did not increase but was equivalent to that measured in Group 5 rats while for MROD, the activity in Group 6 rats was approximately 39% less than that measured in Group 5 rats.

**Table 2.** Mixed function oxygenase activities in rat liver samples.<sup>a</sup>

Group	Sample	EROD (pmol/mg/min)	MROD (pmol/mg/min)
Gp-1	17	31.5 ± 0.43	26.9 ± 2.26
	18	25.4 ± 0.82	27.7 ± 1.03
	20	32.3 ± 0.38	26.6 ± 1.08
	44	42.4 ± 2.29	22.0 ± 1.05
	46	34.1 ± 0.40	25.3 ± 1.05
	<b>Group Average</b>	<b>33.2 ± 6.13</b>	<b>25.7 ± 2.2</b>
Gp-2	32	33.5 ± 1.04	29.3 ± 1.18
	35	33.4 ± 0.88	26.5 ± 2.16
	38	44.2 ± 0.45	24.4 ± 0.30
	40	49.9 ± 0.85	26.9 ± 1.63
	54	42.2 ± 0.88	27.5 ± 1.43
	<b>Group Average</b>	<b>40.6 ± 7.15</b>	<b>26.9 ± 1.8</b>
Gp-3	22	42.3 ± 1.25	36.3 ± 1.56
	24	49.3 ± 1.38	36.1 ± 2.27
	37	54.3 ± 0.52	34.8 ± 2.47
	47	61.2 ± 1.99	31.5 ± 1.87
	50	62.1 ± 0.99	28.0 ± 0.97
	<b>Group Average</b>	<b>53.6 ± 8.07</b>	<b>33.3 ± 3.6</b>
Grp-4	14	73.3 ± 2.52	31.3 ± 1.30
	23	83.6 ± 4.53	51.2 ± 0.30
	39	110 ± 8.26	36.5 ± 0.58
	43	74.7 ± 2.03	24.8 ± 1.36
	53	62.6 ± 1.91	30.9 ± 1.76
	<b>Group Average</b>	<b>80.8 ± 17.9</b>	<b>34.9 ± 10</b>
Gp-5	15	115 ± 4.84	52.0 ± 2.78
	26	120 ± 4.04	36.6 ± 2.40
	27	117 ± 6.76	39.3 ± 1.32
	29	100 ± 3.54	47.0 ± 3.59
	36	80.0 ± 3.55	34.5 ± 2.62
	<b>Group Average</b>	<b>106 ± 16.6</b>	<b>41.9 ± 7.4</b>
Gp-6	30	82.0 ± 1.89	33.6 ± 2.67
	41	118 ± 4.67	39.0 ± 1.02
	42	143 ± 8.34	30.1 ± 1.43
	48	116 ± 0.73	41.2 ± 1.93
	51	91.1 ± 1.00	28.7 ± 1.37
	<b>Group Average</b>	<b>110 ± 24.1</b>	<b>34.5 ± 5.5</b>

<sup>a</sup> Activities given as means and standard deviations. Each sample was analyzed in triplicate.

## **APPENDICES**

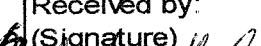
## **Appendix A: Chain of Custody and Data Sheets**

## **CHAIN OF CUSTODY FORM**

COC # : 200

## Dioxin Rat-1

Jan-06

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	2/22/06	 Nancy Heber (2/23/06)			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

## **Appendix B: EROD Excel Spreadsheets**

## Original Data

EROD #1												
Measurement count: 1 Ex: 538 Em: 590 Scaling Factor : 1/1												
Temp(°C)	25.7	1	1	2	3	4	5	6	7	8	9	10
						2.541	65.32	65.84	64.86	2.618	82.13	82.27
				1.108	14.93	109.6	2.119	82.56	82.27	85.69	3.134	72.3
				1.096	15.05	109.3	1.625	30.67	31.03	29.2	2.27	73.44
				1.082	14.88	108.7	1.652	20.22	21.18	20.11	2.307	59.11
				8.21	54.8	147.5	1.638	27.69	25.64	26.33	1.694	24.43
				8.234	54.77	148.4	1.916	36.69	38.05	36.03	1.654	22.06
				8.258	54.66	149.7	2.172	45.69	45.08	44.67	2.487	48.3
						1.859	35.76	34.53	34.21	1.981	38.96	38.83
												40.85
Protein #1												
Measurement count: 1 Ex: 355 Em: 460 Scaling Factor : 1/1												
				1	2	3	4	5	6	7	8	9
							587.5	678.1	656.1	640.3	525.7	554.3
				140	199.9	332.7	501.9	575.5	563.4	557.2	554.5	578.9
				141.1	206.3	334	672.4	692.3	697.2	651.5	456.1	524.9
				140.7	208.4	335.4	539.3	584.8	599.5	555.9	525.8	569.3
				171.3	274.9	369.3	555.4	617.7	586.1	588.3	431.9	546.3
				172.7	273.6	371.1	638.6	647	636.7	623.8	451.6	512.4
				170.3	268.9	368.7	393.4	452.9	470.1	434.1	437.1	504.5
							530.1	556	546.2	521.7	471.4	553.2
												549.1
												566
EROD #2												
Measurement count: 1 Ex: 538 Em: 590 Scaling Factor : 1/1												
Temp(°C)	25.7	1	1	2	3	4	5	6	7	8	9	10
							1.496	17.54	17.59	17.16	1.771	34.41
				1.064	15.07	108	1.876	49	49.15	45.03	2.24	66.59
				1.054	15.05	109.6	1.346	27.66	28.85	29.47	1.569	36.63
				1.059	14.91	109	2.222	65.65	67.04	69.01	2.242	54.02
				8.278	54.22	147.9	2.255	79.12	79.15	75.93	1.792	34.7
				8.255	55.4	150.2	1.967	50.61	51.47	55.09	1.505	25.05
				8.342	54.45	148.8	1.475	22.32	21.79	21.74	1.582	1.132
							1.445	24.91	24.51	25.11	1.488	1.162
												1.156
												1.087
Protein #2												
Measurement count: 1 Ex: 355 Em: 460 Scaling Factor : 1/1												
				1	2	3	4	5	6	7	8	9
								363.7	396.3	395.4	393.5	491.8
				127.3	249.2	336.9	424	436.2	435.8	448.8	523.4	533.6
				128.5	256.1	341.1	499.5	512	530.3	527.1	543.5	545.6
				123.5	253.4	335.7	516.3	511.2	530.9	561.4	548.8	551.9
				181.5	306.2	553.9	501.1	504.6	525.4	532.1	517.1	522.1
				180.4	307.2	552.9	621.9	608.5	620.1	629.8	527	536.6
				179.3	301.6	556	552.3	563.2	553.4	560.2	4.203	127.4
							538.2	539.6	533.1	508.5	7.78	137
												135.2
												130.6

## Data &amp; IDs

<b>EROD PLATE 1</b>																																																																																																																																	
<b>Set 1: EROD Fluorescence Readings</b>																																																																																																																																	
<table border="1"><thead><tr><th></th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th></tr></thead><tbody><tr><td>A</td><td></td><td></td><td></td><td></td><td>2.541</td><td>65.32</td><td>65.84</td><td>64.86</td><td>2.618</td><td>82.13</td><td>82.27</td><td>86.0</td></tr><tr><td>B</td><td></td><td>1.108</td><td>14.93</td><td>109.6</td><td>2.119</td><td>82.56</td><td>82.27</td><td>85.69</td><td>3.134</td><td>72.3</td><td>76.66</td><td>78.68</td></tr><tr><td>C</td><td></td><td>1.096</td><td>15.05</td><td>109.3</td><td>1.625</td><td>30.67</td><td>31.03</td><td>29.2</td><td>2.27</td><td>73.44</td><td>69.91</td><td>78.39</td></tr><tr><td>D</td><td></td><td>1.082</td><td>14.88</td><td>108.7</td><td>1.652</td><td>20.22</td><td>21.18</td><td>20.11</td><td>2.307</td><td>59.11</td><td>59.35</td><td>61.22</td></tr><tr><td>E</td><td></td><td>8.21</td><td>54.8</td><td>147.5</td><td>1.638</td><td>27.69</td><td>25.64</td><td>26.33</td><td>1.694</td><td>24.43</td><td>25.62</td><td>23.14</td></tr><tr><td>F</td><td></td><td>8.234</td><td>54.77</td><td>148.4</td><td>1.916</td><td>36.69</td><td>38.05</td><td>36.03</td><td>1.654</td><td>22.06</td><td>21.95</td><td>22.83</td></tr><tr><td>G</td><td></td><td>8.258</td><td>54.66</td><td>149.7</td><td>2.172</td><td>45.69</td><td>45.08</td><td>44.67</td><td>2.487</td><td>48.3</td><td>49.68</td><td>52.68</td></tr><tr><td>H</td><td></td><td></td><td></td><td></td><td>1.859</td><td>35.76</td><td>34.53</td><td>34.21</td><td>1.981</td><td>38.96</td><td>38.83</td><td>40.85</td></tr></tbody></table>														1	2	3	4	5	6	7	8	9	10	11	12	A					2.541	65.32	65.84	64.86	2.618	82.13	82.27	86.0	B		1.108	14.93	109.6	2.119	82.56	82.27	85.69	3.134	72.3	76.66	78.68	C		1.096	15.05	109.3	1.625	30.67	31.03	29.2	2.27	73.44	69.91	78.39	D		1.082	14.88	108.7	1.652	20.22	21.18	20.11	2.307	59.11	59.35	61.22	E		8.21	54.8	147.5	1.638	27.69	25.64	26.33	1.694	24.43	25.62	23.14	F		8.234	54.77	148.4	1.916	36.69	38.05	36.03	1.654	22.06	21.95	22.83	G		8.258	54.66	149.7	2.172	45.69	45.08	44.67	2.487	48.3	49.68	52.68	H					1.859	35.76	34.53	34.21	1.981	38.96	38.83	40.85
	1	2	3	4	5	6	7	8	9	10	11	12																																																																																																																					
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<b>Set 2: Protein Fluorescence Readings</b>																																																																																																																																	
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## Data &amp; IDs

Cells	Entrix	Exponent	
	Sample ID	Group	Sample
A5-8	S14	Gp-4	14
B5-8	S15	Gp-5	15
C5-8	S17	Gp-1	17
D5-8	S18	Gp-1	18
E5-8	S20	Gp-1	20
F5-8	S22	Gp-3	22
G5-8	S23	Gp-4	23
H5-8	S24	Gp-3	24
A9-12	S26	Gp-5	26
B9-12	S29	Gp-5	29
C9-12	S27	Gp-5	27
D9-12	S30	Gp-6	30
E9-12	S32	Gp-2	32
F9-12	S35	Gp-2	35
G9-12	S36	Gp-5	36
H9-12	S37	Gp-3	37

## Data &amp; IDs

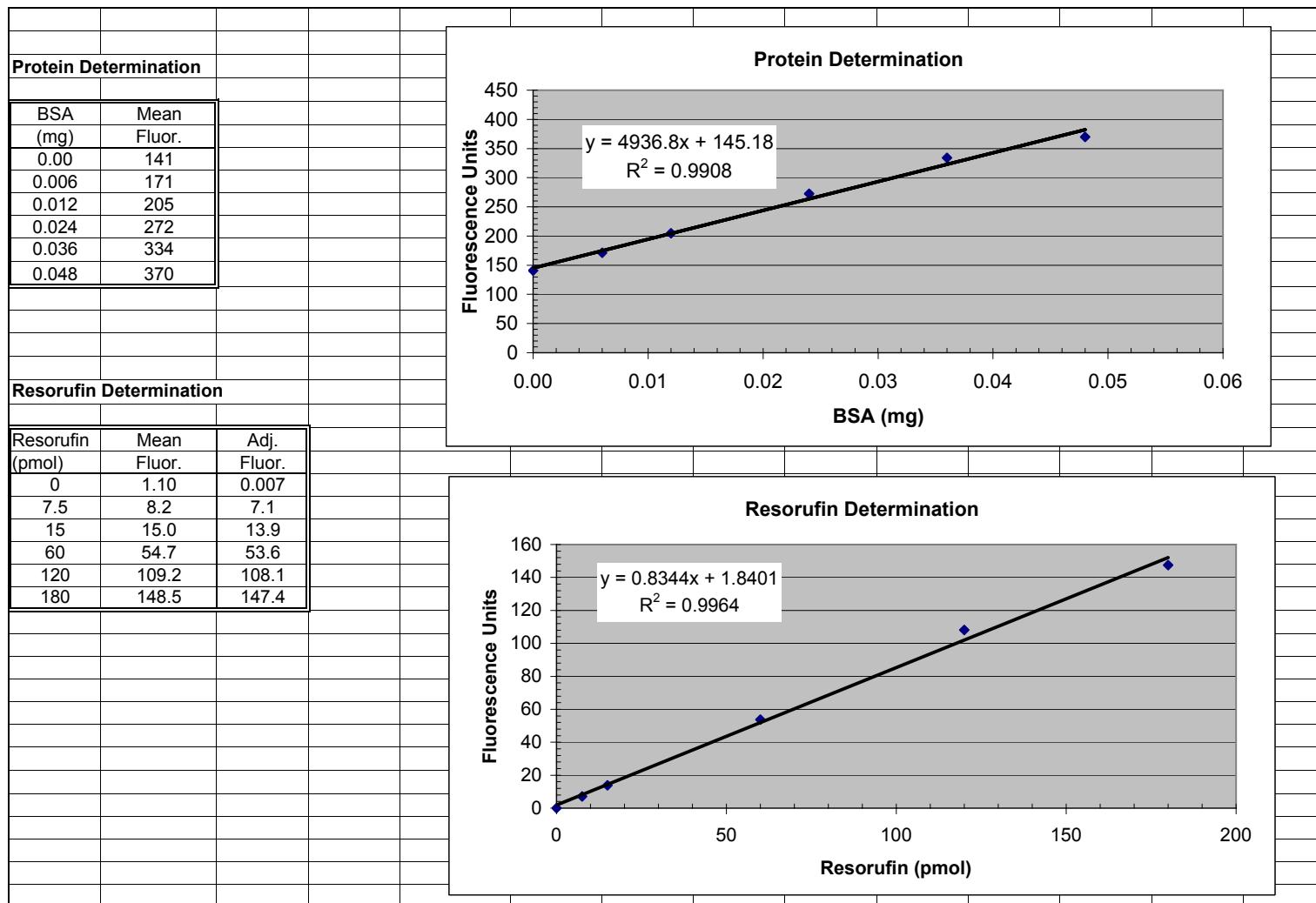
<b>EROD PLATE 2</b>												
<b>Set 1: EROD Fluorescence Readings</b>												
A	1	2	3	4	5	6	7	8	9	10	11	12
A					1.496	17.54	17.59	17.16	1.771	34.41	33.24	35.05
B		1.064	15.07	108	1.876	49	49.15	45.03	2.24	66.59	64.75	66
C		1.054	15.05	109.6	1.346	27.66	28.85	29.47	1.569	36.63	37.99	38.67
D		1.059	14.91	109	2.222	65.65	67.04	69.01	2.242	54.02	57.36	59.37
E		8.278	54.22	147.9	2.255	79.12	79.15	75.93	1.792	34.7	36.25	39.01
F		8.255	55.4	150.2	1.967	50.61	51.47	55.09	1.505	25.05	26.04	26.14
G		8.342	54.45	148.8	1.475	22.32	21.79	21.74				
H					1.445	24.91	24.51	25.11				
<b>Set 2: Protein Fluorescence Readings</b>												
A	1	2	3	4	5	6	7	8	9	10	11	12
A	0	0	0	0	363.7	396.3	395.4	393.5	491.8	509.1	519.3	525.0
B	0	127.3	249.2	336.9	424	436.2	435.8	448.8	523.4	533.6	526.6	534.4
C	0	128.5	256.1	341.1	499.5	512	530.3	527.1	543.5	545.6	553.4	574.4
D	0	123.5	253.4	335.7	516.3	511.2	530.9	561.4	548.8	551.9	573	583.5
E	0	181.5	306.2	553.9	501.1	504.6	525.4	532.1	517.1	522.1	537.3	548.3
F	0	180.4	307.2	552.9	621.9	608.5	620.1	629.8	527	536.6	553.7	540.7
G	0	179.3	301.6	556	552.3	563.2	553.4	560.2				
H	0	0	0	0	538.2	539.6	533.1	508.5				

## Data &amp; IDs

Entrix				Exponent											
Cells	Sample ID	Group	Sample												
A5-8	S38	Gp-2	38												
B5-8	S39	Gp-4	39												
C5-8	S40	Gp-2	40												
D5-8	S41	Gp-6	41												
E5-8	S42	Gp-6	42												
F5-8	S43	Gp-4	43												
G5-8	S44	Gp-1	44												
H5-8	S46	Gp-1	46												
A9-12	S47	Gp-3	47												
B9-12	S48	Gp-6	48												
C9-12	S50	Gp-3	50												
D9-12	S51	Gp-6	51												
E9-12	S53	Gp-4	53												
F9-12	S54	Gp-2	54												
G9-12															
H9-12															

EROD#1 Analysis

EROD#1 Analysis



## EROD#1 Analysis

Set 1: Resorufin Content (pmol)												
	1	2	3	4	5	6	7	8	9	10	11	12
A					0.8	76.1	76.7	75.5	0.9	96.2	96.4	100.9
B					0.3	96.7	96.4	100.5	1.6	84.4	89.7	92.1
C					-0.3	34.6	35.0	32.8	0.5	85.8	81.6	91.7
D					-0.2	22.0	23.2	21.9	0.6	68.6	68.9	71.2
E					-0.2	31.0	28.5	29.4	-0.2	27.1	28.5	25.5
F					0.1	41.8	43.4	41.0	-0.2	24.2	24.1	25.2
G					0.4	52.6	51.8	51.3	0.8	55.7	57.3	60.9
H					0.0	40.7	39.2	38.8	0.2	44.5	44.3	46.8
$y = 1.7073x + 30.29$		X=	0.8344									
		Intercept=	1.8401									
Set 2: Protein Concentration (mg)												
	1	2	3	4	5	6	7	8	9	10	11	12
A					0.090	0.108	0.103	0.100	0.077	0.083	0.081	0.081
B					0.072	0.087	0.085	0.083	0.083	0.088	0.088	0.090
C					0.107	0.111	0.112	0.103	0.063	0.077	0.071	0.074
D					0.080	0.089	0.092	0.083	0.077	0.086	0.083	0.085
E					0.083	0.096	0.089	0.090	0.058	0.081	0.082	0.078
F					0.100	0.102	0.100	0.097	0.062	0.074	0.073	0.073
G					0.050	0.062	0.066	0.059	0.059	0.073	0.072	0.073
H					0.078	0.083	0.081	0.076	0.066	0.083	0.082	0.085
$y = 20735x + 194.95$		X=	4936.8									
		Intercept=	145.18									
Not used for STDs and/or samples												

## EROD#1 Analysis

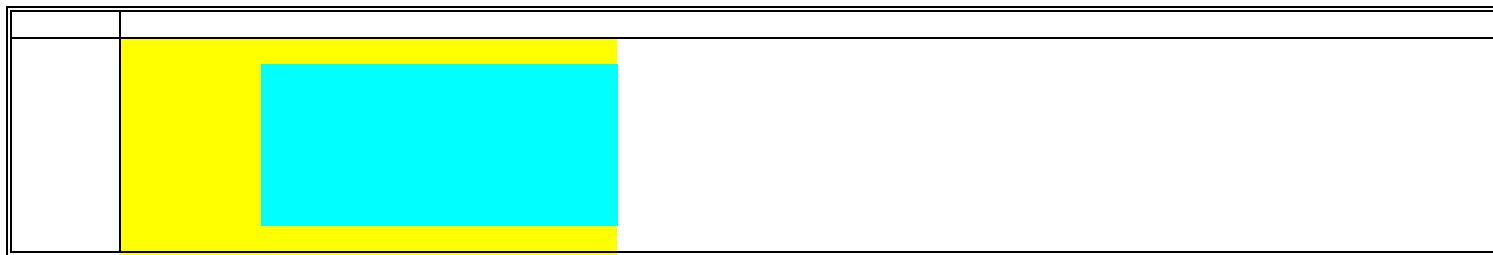
<b>EROD Activity (pmmol/min/mg)</b>												
	1	2	3	4	5	6	7	8	9	10	11	12
A						70.5	74.1	75.3		116.1	119.1	124.1
B						111.0	113.8	120.4		96.1	101.6	102.8
C						31.2	31.3	32.0		111.6	114.4	124.4
D						24.7	25.2	26.3		79.9	82.7	83.5
E						32.4	31.9	32.7		33.3	34.6	32.5
F						41.1	43.6	42.3		32.6	33.2	34.3
G						84.3	78.7	87.7		76.5	80.0	83.6
H						48.9	48.2	50.9		53.8	54.2	54.8
<b>Assay Time:</b>	10	min										
<b>EROD Activity (pmmmol/min/mg)</b>												
Cells	Sample ID	Blank	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Mean	SD	CV (%)	
A5-8	S14	0.0	70.5	74.1	75.3	70.5	74.1	75.3	73.3	2.5	3.4	
B5-8	S15	0.0	111.0	113.8	120.4	111.0	113.8	120.4	115.1	4.84	4.2	
C5-8	S17	0.0	31.2	31.3	32.0	31.2	31.3	32.0	31.5	0.43	1.4	
D5-8	S18	0.0	24.7	25.2	26.3	24.7	25.2	26.3	25.4	0.82	3.2	
E5-8	S20	0.0	32.4	31.9	32.7	32.4	31.9	32.7	32.3	0.38	1.2	
F5-8	S22	0.0	41.1	43.6	42.3	41.1	43.6	42.3	42.3	1.25	3.0	
G5-8	S23	0.0	84.3	78.7	87.7	84.3	78.7	87.7	83.6	4.53	5.4	
H5-8	S24	0.0	48.9	48.2	50.9	48.9	48.2	50.9	49.3	1.38	2.8	
A9-12	S26	0.0	116.1	119.1	124.1	116.1	119.1	124.1	119.8	4.04	3.4	
B9-12	S29	0.0	96.1	101.6	102.8	96.1	101.6	102.8	100.1	3.54	3.5	
C9-12	S27	0.0	111.6	114.4	124.4	111.6	114.4	124.4	116.8	6.76	5.8	
D9-12	S30	0.0	79.9	82.7	83.5	79.9	82.7	83.5	82.0	1.89	2.3	
E9-12	S32	0.0	33.3	34.6	32.5	33.3	34.6	32.5	33.5	1.04	3.1	
F9-12	S35	0.0	32.6	33.2	34.3	32.6	33.2	34.3	33.4	0.88	2.6	
G9-12	S36	0.0	76.5	80.0	83.6	76.5	80.0	83.6	80.0	3.55	4.4	
H9-12	S37	0.0	53.8	54.2	54.8	53.8	54.2	54.8	54.3	0.52	1.0	
Sample Identifications (IDs) can be found in Laboratory Book (Dow#1)												

## EROD#2 Analysis

Samples: Liver Microsomes Processed on 3/6 to 3/8, 2006  
Analysis: EROD analyses conducted on 03-214-2006  
Plate # 2

## Set 1: EROD Fluorescence Readings

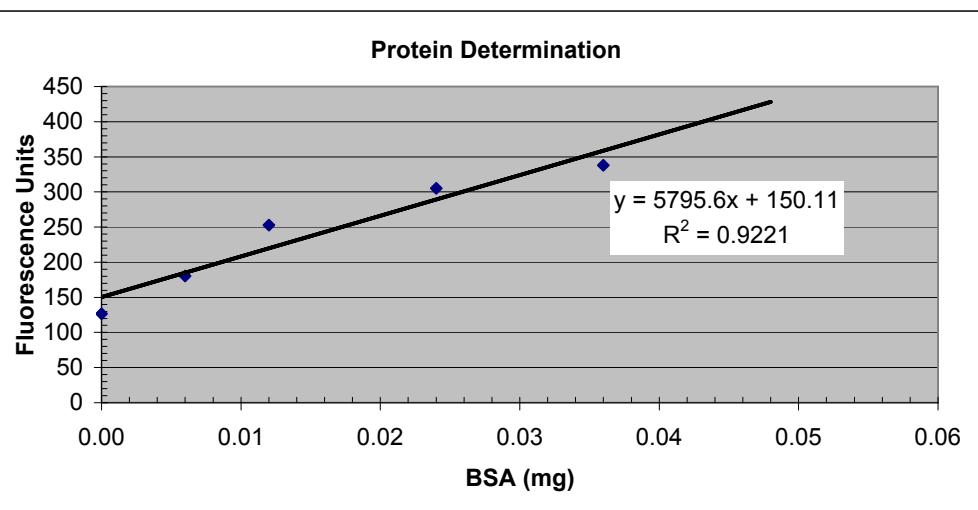
	1	2	3	4	5	6	7	8	9	10	11	12
A					1.50	17.54	17.59	17.16	1.77	34.41	33.24	35.05
B		1.06	15.07	108.00	1.88	49.00	49.15	45.03	2.24	66.59	64.75	66.00
C		1.05	15.05	109.60	1.35	27.66	28.85	29.47	1.57	36.63	37.99	38.67
D		1.06	14.91	109.00	2.22	65.65	67.04	69.01	2.24	54.02	57.36	59.37
E		8.28	54.22	147.90	2.26	79.12	79.15	75.93	1.79	34.70	36.25	39.01
F		8.26	55.40	150.20	1.97	50.61	51.47	55.09	1.51	25.05	26.04	26.14
G		8.34	54.45	148.80	1.48	22.32	21.79	21.74				
H					1.45	24.91	24.51	25.11				



EROD#2 Analysis

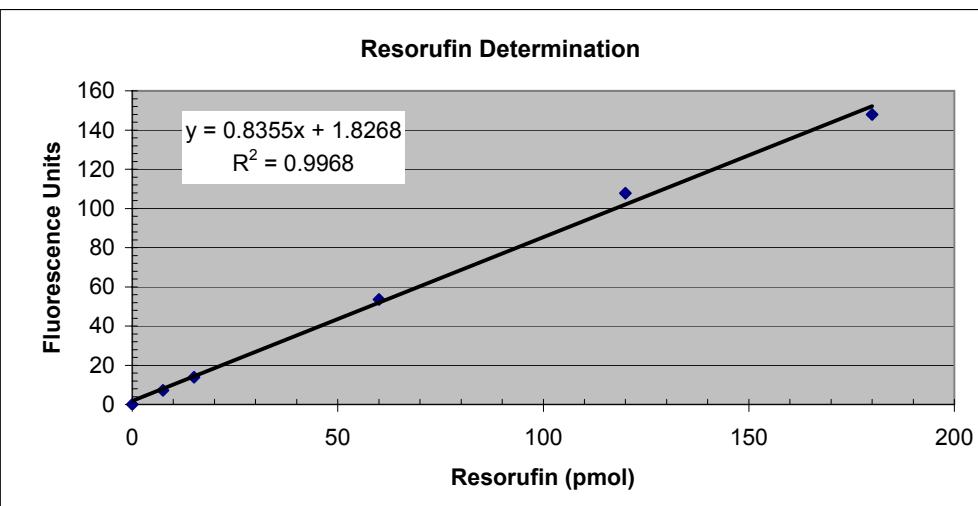
**Protein Determination**

BSA (mg)	Mean Fluor.
0.00	126
0.006	180
0.012	253
0.024	305
0.036	338
0.048	554



**Resorufin Determination**

Resorufin (pmol)	Mean Fluor.	Adj. Fluor.
0	1.06	0
7.5	8.3	7.2
15	15.0	14.0
60	54.7	53.6
120	108.9	107.8
180	149.0	147.9



EROD#2 Analysis

**Set 1: Resorufin Content (pmol)**

	1	2	3	4	5	6	7	8	9	10	11	12
A					-0.4	18.8	18.9	18.4	-0.1	39.0	37.6	39.8
B					0.1	56.5	56.6	51.7	0.5	77.5	75.3	76.8
C					-0.6	30.9	32.3	33.1	-0.3	41.7	43.3	44.1
D					0.5	76.4	78.1	80.4	0.5	62.5	66.5	68.9
E					0.5	92.5	92.5	88.7	0.0	39.3	41.2	44.5
F					0.2	58.4	59.4	63.8	-0.4	27.8	29.0	29.1
G					-0.4	24.5	23.9	23.8				
H					-0.5	27.6	27.1	27.9				

y = 1.7073x + 30.29

X= 0.8355

Intercept= 1.8268

**Set 2: Protein Concentration (mg)**

	1	2	3	4	5	6	7	8	9	10	11	12
A					0.037	0.042	0.042	0.042	0.059	0.062	0.064	0.065
B					0.047	0.049	0.049	0.052	0.064	0.066	0.065	0.066
C					0.060	0.062	0.066	0.065	0.068	0.068	0.070	0.073
D					0.063	0.062	0.066	0.071	0.069	0.069	0.073	0.075
E					0.061	0.061	0.065	0.066	0.063	0.064	0.067	0.069
F					0.081	0.079	0.081	0.083	0.065	0.067	0.070	0.067
G					0.069	0.071	0.070	0.071				
H					0.067	0.067	0.066	0.062				

y = 20735x + 194.95

X= 5795.6

Intercept= 150.11

[Redacted] Not used for STDs and/or samples

EROD#2 Analysis

**EROD Activity (pmmol/min/mg)**

	1	2	3	4	5	6	7	8	9	10	11	12
A					44.3	44.6	43.7		63.0	59.0	61.5	
B					114.4	114.9	100.3		117.1	115.9	115.8	
C					49.5	49.3	50.9		61.0	62.2	60.2	
D					122.6	118.8	113.3		90.1	91.1	92.1	
E					151.2	142.9	134.6		61.3	61.7	64.8	
F					73.8	73.3	77.0		41.7	41.6	43.2	
G					34.4	34.3	33.7					
H					41.1	41.1	45.1					

Assay Time: 10 min

**EROD Activity (pmmol/min/mg)**

Cells	Sample ID	Blank	Raw			Adjusted			Statistics		
			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Mean	SD	CV (%)
A5-8	S38	0.0	44.3	44.6	43.7	44.3	44.6	43.7	44.2	0.4	1.0
B5-8	S39	0.0	114.4	114.9	100.3	114.4	114.9	100.3	109.9	8.26	7.5
C5-8	S40	0.0	49.5	49.3	50.9	49.5	49.3	50.9	49.9	0.85	1.7
D5-8	S41	0.0	122.6	118.8	113.3	122.6	118.8	113.3	118.2	4.67	4.0
E5-8	S42	0.0	151.2	142.9	134.6	151.2	142.9	134.6	142.9	8.34	5.8
F5-8	S43	0.0	73.8	73.3	77.0	73.8	73.3	77.0	74.7	2.03	2.7
G5-8	S44	0.0	34.4	34.3	33.7	34.4	34.3	33.7	34.1	0.40	1.2
H5-8	S46	0.0	41.1	41.1	45.1	41.1	41.1	45.1	42.4	2.29	5.4
A9-12	S47	0.0	63.0	59.0	61.5	63.0	59.0	61.5	61.2	1.99	3.3
B9-12	S48	0.0	117.1	115.9	115.8	117.1	115.9	115.8	116.3	0.73	0.6
C9-12	S50	0.0	61.0	62.2	60.2	61.0	62.2	60.2	61.2	0.99	1.6
D9-12	S51	0.0	90.1	91.1	92.1	90.1	91.1	92.1	91.1	1.00	1.1
E9-12	S53	0.0	61.3	61.7	64.8	61.3	61.7	64.8	62.6	1.91	3.0
F9-12	S54	0.0	41.7	41.6	43.2	41.7	41.6	43.2	42.2	0.88	2.1
G9-12											
H9-12											

Sample Identifications (IDs) can be found in Laboratory Book (Dow#1)

## Summary

### Summary of EROD Results

Entrix Sample ID	Exponent		Statistics			Group Statistics	
	Group	Sample	Mean	Stdev	CV (%)	Mean	Stdev
S17	Gp-1	17	31.5	0.43	1.37		
S18	Gp-1	18	25.4	0.82	3.21		
S20	Gp-1	20	32.3	0.38	1.18	33.2	6.13
S46	Gp-1	46	42.4	2.29	5.40		
S44	Gp-1	44	34.1	0.40	1.17		
S32	Gp-2	32	33.5	1.04	3.10		
S35	Gp-2	35	33.4	0.88	2.64		
S38	Gp-2	38	44.2	0.45	1.01	40.6	7.15
S40	Gp-2	40	49.9	0.85	1.69		
S54	Gp-2	54	42.2	0.88	2.10		
S22	Gp-3	22	42.3	1.25	2.95		
S24	Gp-3	24	49.3	1.38	2.79		
S37	Gp-3	37	54.3	0.52	0.95	53.6	8.07
S47	Gp-3	47	61.2	1.99	3.25		
S50	Gp-3	50	61.2	0.99	1.62		
S14	Gp-4	14	73.3	2.52	3.43		
S23	Gp-4	23	83.6	4.53	5.42		
S39	Gp-4	39	109.9	8.26	7.52	80.8	17.9
S43	Gp-4	43	74.7	2.03	2.71		
S53	Gp-4	53	62.6	1.91	3.05		
S15	Gp-5	15	115.1	4.84	4.21		
S26	Gp-5	26	119.8	4.04	3.37		
S27	Gp-5	27	116.8	6.76	5.79	106.4	16.6
S29	Gp-5	29	100.1	3.54	3.53		
S36	Gp-5	36	80.0	3.55	4.43		
S30	Gp-6	30	82.0	1.89	2.31		
S41	Gp-6	41	118.2	4.67	3.95		
S42	Gp-6	42	142.9	8.34	5.84	110.1	24.1
S48	Gp-6	48	116.3	0.73	0.63		
S51	Gp-6	51	91.1	1.00	1.09		

## **Appendix C: MROD Excel Spreadsheets**

## Original Data

MROD #1												
Measurement count: 1 Ex: 538 Em: 590 Scaling Factor : 1/1												
Temp(°C)	25.7	1	1	2	3	4	5	6	7	8	9	10
						2.685	28.32	29.91	30.89	2.709	26.03	26.06
				1.919	14.33	98.25	2.577	38.33	36.98	35.74	2.647	29.1
				1.858	14.32	98.43	2.474	23.78	26.03	25.2	2.857	30.21
				1.919	14.19	98.08	2.566	21.01	22.67	21.73	2.685	22.71
				8.182	50.04	132.9	2.517	20.53	21.18	20.92	2.656	20.15
				8.382	49.92	133.2	2.712	29.23	32.11	26.92	2.637	16.55
				8.466	49.94	133.8	2.635	27.42	27.15	26.35	2.736	21.35
						2.666	27.24	22.91	26.04	2.55	24.17	26.68
												29.27
Protein #1												
Measurement count: 1 Ex: 355 Em: 460 Scaling Factor : 1/1												
				1	2	3	4	5	6	7	8	9
							603.1	580.2	603.1	586.9	448.5	492.8
				117.7	244.1	333.3	460.4	474.8	488.8	483.8	421.2	436.8
				119.5	248.6	333.3	570.6	595.1	584.8	551	493.8	517.1
				117.6	246	334.1	482.9	505.4	508.2	504.7	422.1	486.5
				177.9	302.7	550.3	509.7	509.3	513.4	488.8	432.6	460
				179.7	299.8	547.6	476.3	525.3	542.8	503.8	318.9	442.6
				179.3	301	559.3	387.2	395.1	392.5	382.2	407.8	436.9
							450.4	490.9	459.2	463.7	476.6	487.3
												506.5
												510.5
MROD #2												
Measurement count: 1 Ex: 538 Em: 590 Scaling Factor : 1/1												
Temp(°C)	25.7	1	1	2	3	4	5	6	7	8	9	10
						2.588	12.08	12.27	11.92	2.762	21.13	20.86
				2.177	14.53	98.95	2.654	20.63	19.99	20.71	2.796	27.1
				2.075	14.46	99.21	2.586	19.7	20.13	18.74	2.806	20.88
				2.109	14.17	99.43	2.716	28	28.69	26.28	2.785	21.54
				8.2	50.42	134.9	2.722	21.8	21.04	19.6	2.836	20.96
				8.451	50.94	137	2.784	22.59	21.97	20.66	2.717	18.78
				8.784	50.93	135.9	2.665	17.18	17.51	16.56	2.314	2.108
							2.726	25.81	26.27	24.2	2.514	2.051
												2.138
												2.096
Protein #2												
Measurement count: 1 Ex: 355 Em: 460 Scaling Factor : 1/1												
				1	2	3	4	5	6	7	8	9
							346.2	384.9	392.8	386.3	497.8	511.2
				121.4	241.9	334.1	411.5	438.9	436.9	440.1	482.6	517.4
				122.4	245.1	338.5	518.2	512.8	537	539	530.1	545.1
				122	241.9	339.5	513.5	531.9	535.1	518.6	520.3	563
				190.4	296.5	568.3	498.3	515.3	512.3	507.3	501.4	527.1
				181.4	297.5	559.7	602.2	618.2	608.3	620.7	519	520.3
				184.2	295.6	555.4	589	532.6	566.4	554.5	4.312	121.4
							482.9	537.9	537	525.5	4.339	127.8
												126
												129.9

## Data &amp; IDs

<b>MROD PLATE 1</b>																																																																																																																																	
<b>Set 1: MROD Fluorescence Readings</b>																																																																																																																																	
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F		179.7	299.8	547.6	476.3	525.3	542.8	503.8	318.9	442.6	446.9	443.3																																																																																																																					
G		179.3	301	559.3	387.2	395.1	392.5	382.2	407.8	436.9	451.1	446.8																																																																																																																					
H					450.4	490.9	459.2	463.7	476.6	487.3	506.5	510.5																																																																																																																					

## Data &amp; IDs

Cells	Entrix	Exponent	
	Sample ID	Group	Sample
A5-8	S14	Gp-4	14
B5-8	S15	Gp-5	15
C5-8	S17	Gp-1	17
D5-8	S18	Gp-1	18
E5-8	S20	Gp-1	20
F5-8	S22	Gp-3	22
G5-8	S23	Gp-4	23
H5-8	S24	Gp-3	24
A9-12	S26	Gp-5	26
B9-12	S29	Gp-5	29
C9-12	S27	Gp-5	27
D9-12	S30	Gp-6	30
E9-12	S32	Gp-2	32
F9-12	S35	Gp-2	35
G9-12	S36	Gp-5	36
H9-12	S37	Gp-3	37

<b>MROD PLATE 2</b>												
<b>Set 1: MROD Fluorescence Readings</b>												
A	1	2	3	4	5	6	7	8	9	10	11	12
A					2.588	12.08	12.27	11.92	2.762	21.13	20.86	23.07
B		2.177	14.53	98.95	2.654	20.63	19.99	20.71	2.796	27.1	28.68	29.74
C		2.075	14.46	99.21	2.586	19.7	20.13	18.74	2.806	20.88	21.42	22.4
D		2.109	14.17	99.43	2.716	28	28.69	26.28	2.785	21.54	21.78	22.58
E		8.2	50.42	134.9	2.722	21.8	21.04	19.6	2.836	20.96	21.81	23.64
F		8.451	50.94	137	2.784	22.59	21.97	20.66	2.717	18.78	19.25	21
G		8.784	50.93	135.9	2.665	17.18	17.51	16.56				
H					2.726	25.81	26.27	24.2				
<b>Set 2: Protein Fluorescence Readings</b>												
A	1	2	3	4	5	6	7	8	9	10	11	12
A	0	0	0	0	346.2	384.9	392.8	386.3	497.8	511.2	510.7	511.1
B	0	121.4	241.9	334.1	411.5	438.9	436.9	440.1	482.6	517.4	522.7	519.1
C	0	122.4	245.1	338.5	518.2	512.8	537	539	530.1	545.1	567.2	558.4
D	0	122	241.9	339.5	513.5	531.9	535.1	518.6	520.3	563	555.1	545.1
E	0	190.4	296.5	568.3	498.3	515.3	512.3	507.3	501.4	527.1	521.9	533.2
F	0	181.4	297.5	559.7	602.2	618.2	608.3	620.7	519	520.3	519.2	528.6
G	0	184.2	295.6	555.4	589	532.6	566.4	554.5				
H	0	0	0	0	482.9	537.9	537	525.5				

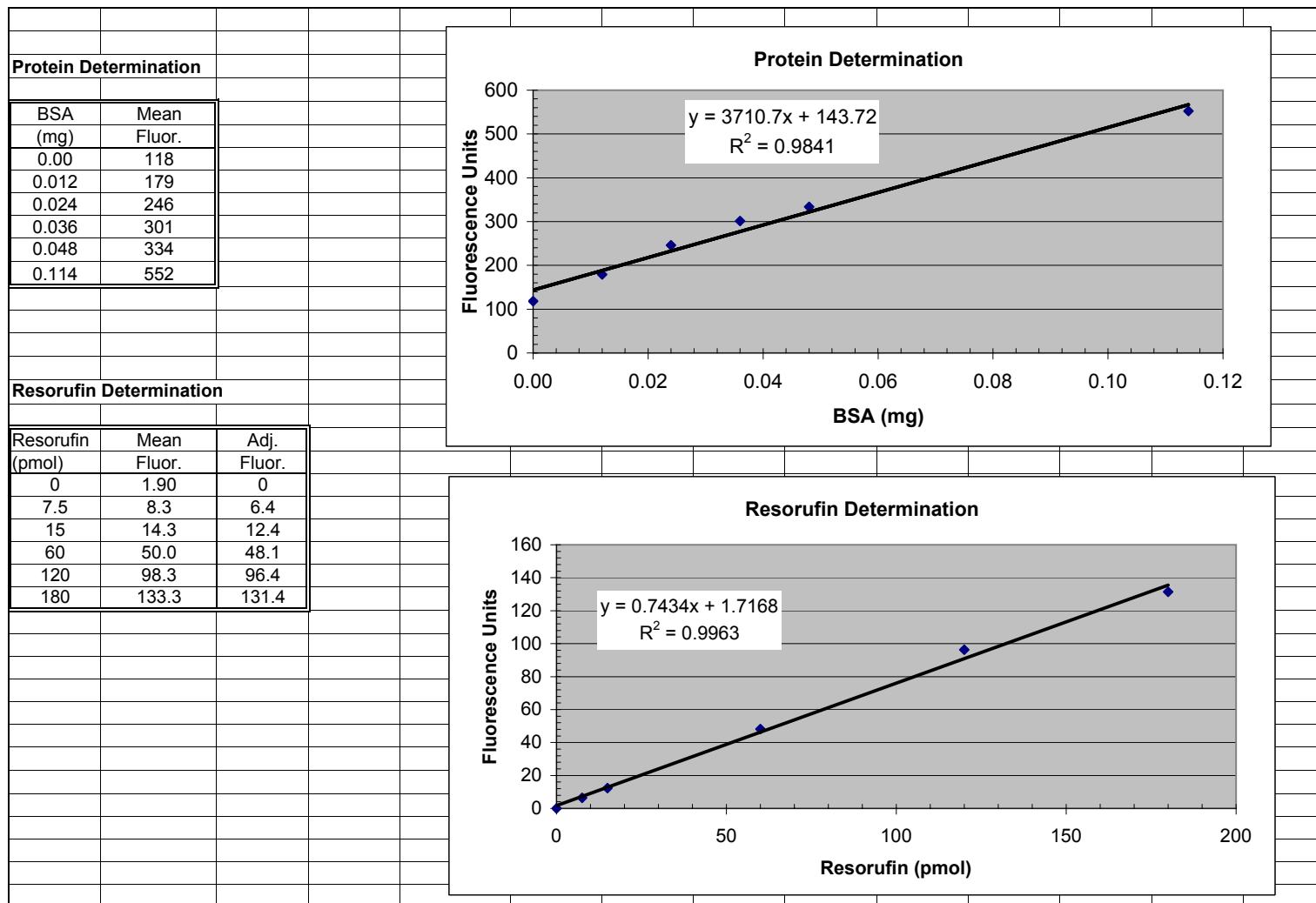
## Data &amp; IDs

Entrix				Exponent											
Cells	Sample ID	Group	Sample												
A5-8	S38	Gp-2	38												
B5-8	S39	Gp-4	39												
C5-8	S40	Gp-2	40												
D5-8	S41	Gp-6	41												
E5-8	S42	Gp-6	42												
F5-8	S43	Gp-4	43												
G5-8	S44	Gp-1	44												
H5-8	S46	Gp-1	46												
A9-12	S47	Gp-3	47												
B9-12	S48	Gp-6	48												
C9-12	S50	Gp-3	50												
D9-12	S51	Gp-6	51												
E9-12	S53	Gp-4	53												
F9-12	S54	Gp-2	54												
G9-12															
H9-12															

## MROD#1 Analysis

<b>Samples:</b>	Liver Microsomes Processed on 3/6 to 3/8, 2006											
<b>Analysis:</b>	MROD analyses conducted on 03-21-2006											
<b>Plate #1</b>												
<b>Set 1: EROD Fluorescence Readings</b>												
	1	2	3	4	5	6	7	8	9	10	11	12
A				0.0	2.69	28.3	29.9	30.9	2.7	26.0	26.1	29.3
B		1.9	14.3	98.3	2.58	38.3	37.0	35.7	2.6	29.1	29.1	33.7
C		1.9	14.3	98.4	2.47	23.8	26.0	25.2	2.9	30.2	31.4	34.4
D		1.9	14.2	98.1	2.57	21.0	22.7	21.7	2.7	22.7	26.1	26.3
E		8.2	50.0	132.9	2.52	20.5	21.2	20.9	2.7	20.2	20.4	22.1
F		8.4	49.9	133.2	2.71	29.2	32.1	26.9	2.6	16.6	17.4	19.1
G		8.5	49.9	133.8	2.64	27.4	27.2	26.4	2.7	21.4	21.8	24.5
H					2.67	27.2	22.9	26.0	2.6	24.2	26.7	29.3
<b>Set 2: Protein Fluorescence Readings</b>												
	1	2	3	4	5	6	7	8	9	10	11	12
A					603	580	603	587	449	493	483	493
B		118	244	333	460	475	489	484	421	437	457	458
C		120	249	333	571	595	585	551	494	517	524	545
D		118	246	334	483	505	508	505	422	487	495	489
E		178	303	550	510	509	513	489	433	460	475	478
F		180	300	548	476	525	543	504	319	443	447	443
G		179	301	559	387	395	393	382	408	437	451	447
H					450	491	459	464	477	487	507	511

## MROD#1 Analysis



## MROD#1 Analysis

Set 1: Resorufin Content (pmol)												
	1	2	3	4	5	6	7	8	9	10	11	12
A					1.3	35.8	37.9	39.2	1.3	32.7	32.7	37.0
B					1.2	49.3	47.4	45.8	1.3	36.8	36.9	43.1
C					1.0	29.7	32.7	31.6	1.5	38.3	40.0	44.0
D					1.1	26.0	28.2	26.9	1.3	28.2	32.8	33.1
E					1.1	25.3	26.2	25.8	1.3	24.8	25.2	27.5
F					1.3	37.0	40.9	33.9	1.2	20.0	21.1	23.3
G					1.2	34.6	34.2	33.1	1.4	26.4	27.1	30.7
H					1.3	34.3	28.5	32.7	1.1	30.2	33.6	37.1
$y = 1.7073x + 30.29$		X=	0.7434									
		Intercept=	1.7168									
Set 2: Protein Concentration (mg)												
	1	2	3	4	5	6	7	8	9	10	11	12
A					0.124	0.118	0.124	0.119	0.082	0.094	0.092	0.094
B					0.085	0.089	0.093	0.092	0.075	0.079	0.084	0.085
C					0.115	0.122	0.119	0.110	0.094	0.101	0.102	0.108
D					0.091	0.097	0.098	0.097	0.075	0.092	0.095	0.093
E					0.099	0.099	0.100	0.093	0.078	0.085	0.089	0.090
F					0.090	0.103	0.108	0.097	0.047	0.081	0.082	0.081
G					0.066	0.068	0.067	0.064	0.071	0.079	0.083	0.082
H					0.083	0.094	0.085	0.086	0.090	0.093	0.098	0.099
$y = 20735x + 194.95$		X=	3710.8									
		Intercept=	143.7									
Not used for STDs and/or samples												

## MROD#1 Analysis

	<b>MROD Activity (pmmol/min/mg)</b>											
	1	2	3	4	5	6	7	8	9	10	11	12
A						30.4	30.6	32.9		34.8	35.8	39.3
B						55.2	51.0	49.9		46.6	43.6	50.8
C						24.4	27.5	28.8		38.1	39.0	40.7
D						26.6	28.7	27.7		30.6	34.7	35.6
E						25.7	26.3	27.8		29.1	28.2	30.5
F						36.0	38.0	34.9		24.8	25.8	28.9
G						51.0	51.0	51.6		33.4	32.7	37.5
H						36.7	33.5	37.9		32.6	34.3	37.5
<b>Assay Time:</b>	10	min										
	<b>MROD Activity (pmmol/min/mg)</b>											
	Cells	Sample ID	Blank	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Mean	SD	CV (%)
A5-8	S14	0.0	30.4	30.6	32.9	30.4	30.6	32.9	31.3	1.3	4.3	
B5-8	S15	0.0	55.2	51.0	49.9	55.2	51.0	49.9	52.0	2.78	5.3	
C5-8	S17	0.0	24.4	27.5	28.8	24.4	27.5	28.8	26.9	2.26	8.4	
D5-8	S18	0.0	26.6	28.7	27.7	26.6	28.7	27.7	27.7	1.03	3.7	
E5-8	S20	0.0	25.7	26.3	27.8	25.7	26.3	27.8	26.6	1.08	4.1	
F5-8	S22	0.0	36.0	38.0	34.9	36.0	38.0	34.9	36.3	1.56	4.3	
G5-8	S23	0.0	51.0	51.0	51.6	51.0	51.0	51.6	51.2	0.30	0.6	
H5-8	S24	0.0	36.7	33.5	37.9	36.7	33.5	37.9	36.1	2.27	6.3	
A9-12	S26	0.0	34.8	35.8	39.3	34.8	35.8	39.3	36.6	2.40	6.6	
B9-12	S29	0.0	46.6	43.6	50.8	46.6	43.6	50.8	47.0	3.59	7.6	
C9-12	S27	0.0	38.1	39.0	40.7	38.1	39.0	40.7	39.3	1.32	3.4	
D9-12	S30	0.0	30.6	34.7	35.6	30.6	34.7	35.6	33.6	2.67	7.9	
E9-12	S32	0.0	29.1	28.2	30.5	29.1	28.2	30.5	29.3	1.18	4.0	
F9-12	S35	0.0	24.8	25.8	28.9	24.8	25.8	28.9	26.5	2.16	8.1	
G9-12	S36	0.0	33.4	32.7	37.5	33.4	32.7	37.5	34.5	2.62	7.6	
H9-12	S37	0.0	32.6	34.3	37.5	32.6	34.3	37.5	34.8	2.47	7.1	
Sample Identifications (IDs) can be found in Laboratory Book (Dow#1)												

### MROD#2 Analysis

Samples: Liver Microsomes Processed on 3/6 to 3/8, 2006  
Analysis: MROD analyses conducted on 03-21-2006  
Plate # 2

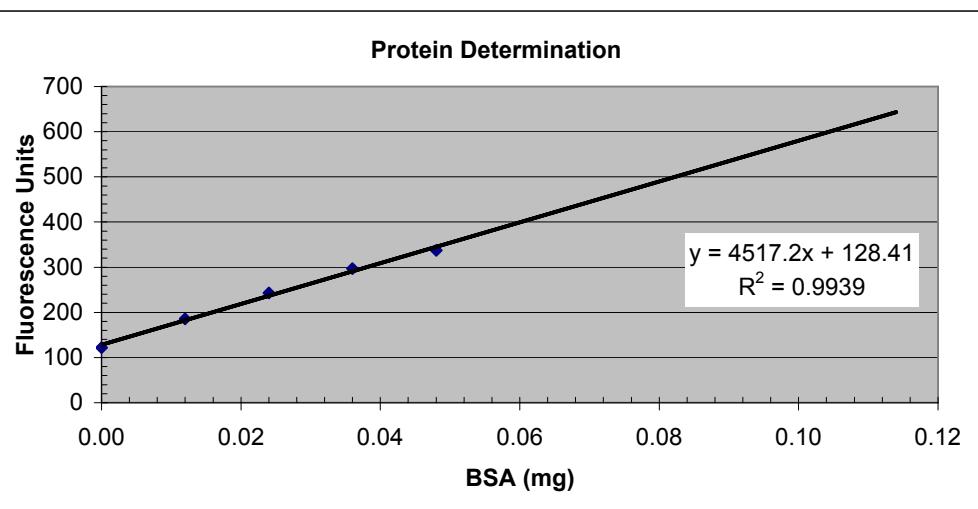
#### Set 1: MROD Fluorescence Readings

	1	2	3	4	5	6	7	8	9	10	11	12
A					2.59	12.08	12.27	11.92	2.76	21.13	20.86	23.07
B		2.18	14.53	98.95	2.65	20.63	19.99	20.71	2.80	27.10	28.68	29.74
C		2.08	14.46	99.21	2.59	19.70	20.13	18.74	2.81	20.88	21.42	22.40
D		2.11	14.17	99.43	2.72	28.00	28.69	26.28	2.79	21.54	21.78	22.58
E		8.20	50.42	134.90	2.72	21.80	21.04	19.60	2.84	20.96	21.81	23.64
F		8.45	50.94	137.00	2.78	22.59	21.97	20.66	2.72	18.78	19.25	21.00
G		8.78	50.93	135.90	2.67	17.18	17.51	16.56				
H					2.73	25.81	26.27	24.20				


MROD#2 Analysis

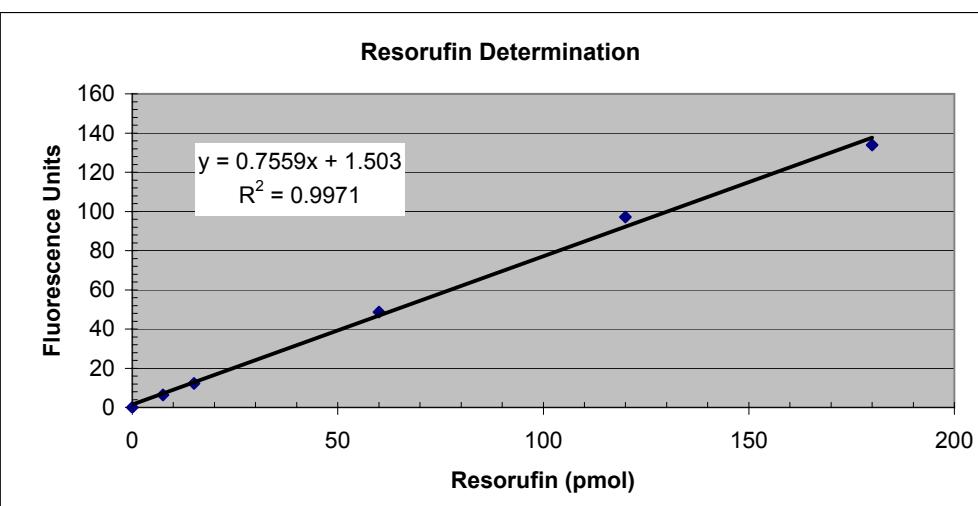
**Protein Determination**

BSA (mg)	Mean Fluor.
0.00	122
0.012	185
0.024	243
0.036	297
0.048	337
0.114	561



**Resorufin Determination**

Resorufin (pmol)	Mean Fluor.	Adj. Fluor.
0	2.12	0
7.5	8.5	6.4
15	14.4	12.3
60	50.8	48.6
120	99.2	97.1
180	135.9	133.8



MROD#2 Analysis

**Set 1: Resorufin Content (pmol)**

	1	2	3	4	5	6	7	8	9	10	11	12
A					1.4	14.0	14.2	13.8	1.7	26.0	25.6	28.5
B					1.5	25.3	24.5	25.4	1.7	33.9	36.0	37.4
C					1.4	24.1	24.6	22.8	1.7	25.6	26.3	27.6
D					1.6	35.1	36.0	32.8	1.7	26.5	26.8	27.9
E					1.6	26.9	25.8	23.9	1.8	25.7	26.9	29.3
F					1.7	27.9	27.1	25.3	1.6	22.9	23.5	25.8
G					1.5	20.7	21.2	19.9				
H					1.6	32.2	32.8	30.0				

$$y = 1.7073x + 30.29$$

$$X= 0.7559$$

$$\text{Intercept}= 1.503$$

**Set 2: Protein Concentration (mg)**

	1	2	3	4	5	6	7	8	9	10	11	12
A					0.048	0.057	0.059	0.057	0.082	0.085	0.085	0.085
B					0.063	0.069	0.068	0.069	0.078	0.086	0.087	0.086
C					0.086	0.085	0.090	0.091	0.089	0.092	0.097	0.095
D					0.085	0.089	0.090	0.086	0.087	0.096	0.094	0.092
E					0.082	0.086	0.085	0.084	0.083	0.088	0.087	0.090
F					0.105	0.108	0.106	0.109	0.086	0.087	0.087	0.089
G					0.102	0.089	0.097	0.094				
H					0.078	0.091	0.090	0.088				

$$y = 20735x + 194.95$$

$$X= 4517.2$$

$$\text{Intercept}= 128.4$$

[REDACTED] Not used

MROD#2 Analysis

**MROD Activity (pmmol/min/mg)**

	1	2	3	4	5	6	7	8	9	10	11	12
A						24.6	24.3	24.1		30.6	30.3	33.7
B						36.8	35.8	36.8		39.3	41.2	43.2
C						28.3	27.2	25.1		27.8	27.1	29.0
D						39.2	39.9	37.9		27.6	28.4	30.2
E						31.4	30.4	28.5		29.2	30.8	32.7
F						25.7	25.5	23.3		26.3	27.1	29.1
G						23.2	21.8	21.1				
H						35.5	36.2	34.2				

Assay Time: 10 min

**MROD Activity (pmmol/min/mg)**

Cells	Sample ID	Blank	Raw			Adjusted			Statistics		
			Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Mean	SD	CV (%)
A5-8	S38	0.0	24.6	24.3	24.1	24.6	24.3	24.1	24.4	0.3	1.0
B5-8	S39	0.0	36.8	35.8	36.8	36.8	35.8	36.8	36.5	0.58	1.6
C5-8	S40	0.0	28.3	27.2	25.1	28.3	27.2	25.1	26.9	1.63	6.1
D5-8	S41	0.0	39.2	39.9	37.9	39.2	39.9	37.9	39.0	1.02	2.6
E5-8	S42	0.0	31.4	30.4	28.5	31.4	30.4	28.5	30.1	1.43	4.7
F5-8	S43	0.0	25.7	25.5	23.3	25.7	25.5	23.3	24.8	1.36	5.5
G5-8	S44	0.0	23.2	21.8	21.1	23.2	21.8	21.1	22.0	1.05	4.7
H5-8	S46	0.0	35.5	36.2	34.2	35.5	36.2	34.2	35.3	1.05	3.0
A9-12	S47	0.0	30.6	30.3	33.7	30.6	30.3	33.7	31.5	1.87	5.9
B9-12	S48	0.0	39.3	41.2	43.2	39.3	41.2	43.2	41.2	1.93	4.7
C9-12	S50	0.0	27.8	27.1	29.0	27.8	27.1	29.0	28.0	0.97	3.5
D9-12	S51	0.0	27.6	28.4	30.2	27.6	28.4	30.2	28.7	1.37	4.8
E9-12	S53	0.0	29.2	30.8	32.7	29.2	30.8	32.7	30.9	1.76	5.7
F9-12	S54	0.0	26.3	27.1	29.1	26.3	27.1	29.1	27.5	1.43	5.2
G9-12											
H9-12											

Sample Identifications (IDs) can be found in Laboratory Book (Dow#1)

## Summary

### Summary of MROD Results

Entrix Sample ID	Exponent		Statistics			Group Statistics	
	Group	Sample	Mean	Stdev	CV (%)	Mean	Stdev
S17	Gp-1	17	26.9	2.26	8.18	25.7	2.2
S18	Gp-1	18	27.7	1.03	3.76		
S20	Gp-1	20	26.6	1.08	3.87		
S44	Gp-1	44	22.0	1.05	4.89		
S46	Gp-1	46	25.3	1.05	2.89		
S32	Gp-2	32	29.3	1.18	4.09	26.9	1.8
S35	Gp-2	35	26.5	2.16	8.14		
S38	Gp-2	38	24.4	0.30	1.09		
S40	Gp-2	40	26.9	1.63	6.22		
S54	Gp-2	54	27.5	1.43	5.12		
S22	Gp-3	22	36.3	1.56	4.56	33.3	3.6
S24	Gp-3	24	36.1	2.27	6.42		
S37	Gp-3	37	34.8	2.47	7.26		
S47	Gp-3	47	31.5	1.87	5.94		
S50	Gp-3	50	28.0	0.97	3.50		
S14	Gp-4	14	31.3	1.30	4.29	34.9	10.0
S23	Gp-4	23	51.2	0.30	0.38		
S39	Gp-4	39	36.5	0.58	1.56		
S43	Gp-4	43	24.8	1.36	5.52		
S53	Gp-4	53	30.9	1.76	5.65		
S15	Gp-5	15	52.0	2.78	5.24	41.9	7.4
S26	Gp-5	26	36.6	2.40	6.58		
S29	Gp-5	29	47.0	3.59	7.68		
S27	Gp-5	27	39.3	1.32	3.54		
S36	Gp-5	36	34.5	2.62	7.61		
S30	Gp-6	30	33.6	2.67	7.97	34.5	5.5
S41	Gp-6	41	39.0	1.02	2.50		
S42	Gp-6	42	30.1	1.43	4.70		
S48	Gp-6	48	41.2	1.93	4.68		
S51	Gp-6	51	28.7	1.37	4.86		

## **Appendix D**

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### **Detailed Study Data**

**Table D-1. Rat feed intake during the follow-up study**

Date: Study Day:	2-Day Feed Intake (g)															Total Feed Intake (g)
	25-Jan 2	27-Jan 4	29-Jan 6	31-Jan 8	2-Feb 10	4-Feb 12	6-Feb 14	8-Feb 16	10-Feb 18	12-Feb 20	14-Feb 22	16-Feb 24	18-Feb 26	20-Feb 28	22-Feb 30	
<b>Group 1: Feed Control</b>																
17	33.15	30.83	31.56	28.46	36.92	32.01	32.79	36.88	28.96	36.88	33.44	32.54	36.44	24.59	32.99	488.44
18	25.49	36.99	31.63	33.73	29.82	34.51	39.92	32.49	37.33	36.96	32.91	41.51	33.94	36.94	33.09	517.26
20	26.63	35.64	29.09	34.60	32.61	31.26	38.22	29.80	35.88	35.40	31.60	35.67	29.34	35.21	33.58	494.53
44	31.39	30.38	38.08	37.56	32.82	41.00	33.42	41.98	44.06	38.54	43.50	32.98	41.99	34.74	32.11	554.55
46	24.34	22.86	29.82	24.33	26.05	26.02	33.85	31.72	30.24	36.67	31.30	31.63	33.18	28.34	33.25	443.60
<b>Mean:</b>	<b>28.20</b>	<b>31.34</b>	<b>32.04</b>	<b>31.74</b>	<b>31.64</b>	<b>32.96</b>	<b>35.64</b>	<b>34.57</b>	<b>35.29</b>	<b>36.89</b>	<b>34.55</b>	<b>34.87</b>	<b>34.98</b>	<b>31.96</b>	<b>33.00</b>	<b>499.68</b>
<b>Group 2: Oil Control</b>																
19 <sup>a</sup>	27.82	31.31	26.39	28.12	26.73	32.74	33.07	32.36	27.96	27.66	28.31	29.68	29.64	30.16	28.11	--
25 <sup>b</sup>	25.16	30.08	22.66	0.27	--	--	--	--	--	--	--	--	--	--	--	--
32	25.37	22.28	24.43	21.42	20.59	25.80	19.53	26.71	22.94	21.00	26.79	19.45	24.78	25.96	22.15	349.20
35	29.46	21.51	24.65	26.02	23.18	33.30	31.89	32.83	24.02	27.60	27.00	18.33	24.18	23.60	26.13	393.70
38	26.84	27.75	33.66	32.42	24.00	31.30	32.76	28.10	30.57	25.35	28.12	28.06	28.81	32.74	20.49	430.97
40	22.83	18.24	27.08	21.35	26.06	21.21	26.37	18.93	23.67	18.13	28.33	20.20	24.32	21.46	24.87	343.05
54	26.31	30.31	33.04	24.98	27.20	29.10	33.34	24.27	34.35	33.02	31.66	31.84	30.50	32.95	30.33	453.20
<b>Mean:</b>	<b>26.16</b>	<b>24.02</b>	<b>28.57</b>	<b>25.24</b>	<b>24.21</b>	<b>28.14</b>	<b>28.78</b>	<b>26.17</b>	<b>27.11</b>	<b>25.02</b>	<b>28.38</b>	<b>23.58</b>	<b>26.52</b>	<b>27.34</b>	<b>24.79</b>	<b>394.02</b>
<b>Group 3: Oil Reference 0.2X</b>																
22	22.83	24.61	30.70	33.54	32.37	30.63	21.18	23.39	19.59	23.77	18.15	29.42	24.67	25.48	28.29	388.62
24	25.52	29.38	27.17	27.35	26.12	32.34	32.21	25.57	32.46	27.22	27.93	31.61	23.60	25.41	23.44	417.33
37	27.49	29.33	26.62	28.45	20.82	31.32	24.49	28.35	28.51	22.78	34.85	24.97	30.60	28.29	25.29	412.16
45 <sup>a</sup>	24.45	25.88	24.71	27.54	20.68	26.31	28.10	21.13	28.02	23.89	22.42	30.09	25.05	16.75	0.14	--
47	27.07	27.41	26.49	25.56	25.43	23.93	29.70	27.38	24.19	30.43	27.75	29.28	34.02	26.45	32.18	417.27
49 <sup>a</sup>	24.82	26.60	29.43	29.11	28.41	30.94	24.33	34.70	27.20	26.80	34.51	22.91	37.50	30.73	25.43	--
50	26.94	24.98	29.14	24.24	24.07	25.17	25.35	27.28	27.21	21.16	28.82	23.66	31.01	24.83	24.24	388.10
<b>Mean:</b>	<b>25.97</b>	<b>27.14</b>	<b>28.02</b>	<b>27.83</b>	<b>25.76</b>	<b>28.68</b>	<b>26.59</b>	<b>26.39</b>	<b>26.39</b>	<b>25.07</b>	<b>27.50</b>	<b>27.79</b>	<b>28.78</b>	<b>26.09</b>	<b>26.69</b>	<b>404.70</b>
<b>Group 4: Oil Reference 0.5X</b>																
14	25.54	25.79	17.01	27.77	23.07	26.21	20.33	20.39	24.20	6.33	25.34	30.74	36.95	27.24	34.09	371.00
21 <sup>a</sup>	26.10	32.94	26.28	28.88	23.76	28.58	30.85	20.26	27.55	31.91	25.51	30.04	23.16	30.95	23.42	--
23	22.67	26.65	32.43	22.06	26.97	24.13	29.45	29.86	28.13	29.93	24.49	30.27	30.49	30.64	29.96	418.13
33 <sup>a</sup>	26.29	30.14	26.90	22.27	22.79	23.81	26.28	28.10	31.53	23.10	32.35	36.04	35.44	43.59	38.59	--
39	23.39	25.04	33.88	25.66	33.19	31.68	31.78	34.97	28.22	30.35	32.65	28.82	34.80	28.29	28.81	451.53
43	26.86	30.62	33.36	34.20	34.76	30.15	27.89	21.33	33.42	24.45	28.00	32.51	25.43	31.64	26.77	441.39
53	25.80	31.59	30.91	36.63	31.09	34.70	35.53	24.74	31.20	31.36	27.73	31.13	26.45	35.36	32.26	466.48
<b>Mean:</b>	<b>24.85</b>	<b>27.94</b>	<b>29.52</b>	<b>29.26</b>	<b>29.82</b>	<b>29.37</b>	<b>29.00</b>	<b>26.26</b>	<b>29.03</b>	<b>24.48</b>	<b>27.64</b>	<b>30.69</b>	<b>30.82</b>	<b>30.63</b>	<b>30.38</b>	<b>429.71</b>

**Table D-1. (cont.)**

Date:	2-Day Feed Intake (g)															Total Feed Intake (g)
	25-Jan	27-Jan	29-Jan	31-Jan	2-Feb	4-Feb	6-Feb	8-Feb	10-Feb	12-Feb	14-Feb	16-Feb	18-Feb	20-Feb	22-Feb	
Study Day:	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	
<b>Group 5: Oil Reference 0.8X</b>																
15	22.41	25.05	27.71	22.33	28.54	23.84	30.95	26.26	30.06	32.11	24.97	30.13	29.01	28.33	31.18	412.88
26	21.25	23.87	26.33	21.88	24.62	25.72	32.05	19.55	32.84	35.16	28.87	32.60	26.05	31.12	22.04	403.95
27	21.73	28.41	24.12	23.40	21.49	28.94	23.46	25.40	21.20	26.75	26.33	24.17	27.95	26.31	24.21	373.87
28 <sup>a</sup>	22.44	20.27	27.24	21.21	27.04	20.19	27.06	24.04	28.72	24.77	23.04	28.70	22.12	27.79	24.99	--
29	27.75	37.38	39.79	33.81	37.71	34.64	31.63	37.23	22.03	39.07	36.35	31.50	38.33	31.14	36.14	514.50
36	18.65	28.33	31.84	29.11	31.34	30.04	34.74	30.63	34.21	22.16	24.16	35.36	32.47	32.77	29.38	445.19
52 <sup>b</sup>	24.71	25.12	27.10	27.57	12.46	--	--	--	--	--	--	--	--	--	--	--
<b>Mean:</b>	<b>22.36</b>	<b>28.61</b>	<b>29.96</b>	<b>26.11</b>	<b>28.74</b>	<b>28.64</b>	<b>30.57</b>	<b>27.81</b>	<b>28.07</b>	<b>31.05</b>	<b>28.14</b>	<b>30.75</b>	<b>30.76</b>	<b>29.93</b>	<b>28.59</b>	<b>430.08</b>
<b>Group 6: Soil</b>																
30	39.40	37.11	39.86	35.91	36.62	35.29	38.75	36.46	40.31	34.79	40.02	33.89	37.63	37.29	32.93	556.26
41	33.81	40.92	38.26	33.89	40.31	33.20	40.64	43.86	38.10	45.21	40.19	40.08	44.26	38.48	38.81	590.02
42	33.01	32.66	34.83	36.54	33.92	41.92	37.25	35.85	40.37	32.62	38.43	36.49	35.65	37.54	30.71	537.79
48	28.32	37.65	27.64	37.53	31.61	32.30	38.34	27.13	38.67	29.00	32.21	35.63	28.42	37.24	32.07	493.76
51	26.54	38.20	32.34	37.60	40.04	33.70	41.14	32.05	39.44	42.25	30.72	37.28	31.70	38.21	33.34	534.55
<b>Mean:</b>	<b>32.22</b>	<b>37.31</b>	<b>34.59</b>	<b>36.29</b>	<b>36.50</b>	<b>35.28</b>	<b>39.22</b>	<b>35.07</b>	<b>39.38</b>	<b>36.77</b>	<b>36.31</b>	<b>36.67</b>	<b>35.53</b>	<b>37.75</b>	<b>33.57</b>	<b>542.48</b>

<sup>a</sup> To allow for gavage-related mortality, seven rats, rather than five, were included in each of the corn oil gavage groups during the compound administration phase of the study.

This rat was randomly selected to be excluded from the final group used for tissue collection, and feed intake values for this animal are not included in the group means.

<sup>b</sup> This rat was euthanized before the end of the study. Feed intake values for this animal are not included in the group means.

**Table D-2. Rat body weights during the follow-up study**

Date: Study Day:	Body Weight (g)						Mean Body Weight (g)
	18-Jan -5	24-Jan 1	30-Jan 7	7-Feb 15	14-Feb 22	22-Feb 30	
<b>Group 1: Feed Control</b>							
17	260.00	271.10	266.43	276.55	267.87	275.73	271.54
18	266.10	271.40	273.42	282.37	282.77	285.47	279.09
20	262.10	264.59	268.23	273.94	275.20	282.15	272.82
44	266.50	272.31	278.60	288.44	290.69	294.25	284.86
46	287.80	294.23	280.61	281.65	267.48	274.20	279.63
<b>Mean:</b>	<b>268.50</b>	<b>274.73</b>	<b>273.46</b>	<b>280.59</b>	<b>276.80</b>	<b>282.36</b>	<b>277.59</b>
<b>Group 2: Oil Control</b>							
19 <sup>b</sup>	256.30	280.67	260.09	267.71	268.25	--	--
25 <sup>c</sup>	272.40	278.90	264.74	--	--	--	--
32	263.50	268.10	267.93	260.41	260.22	264.95	264.32
35	255.70	247.44	257.95	275.88	263.35	264.98	261.92
38	279.90	286.65	289.17	289.97	286.76	285.30	287.57
40	255.90	257.43	256.08	254.48	255.45	255.49	255.79
54	260.00	267.67	268.07	271.78	279.51	280.96	273.60
<b>Mean:</b>	<b>263.00</b>	<b>265.46</b>	<b>267.84</b>	<b>270.50</b>	<b>269.06</b>	<b>270.34</b>	<b>268.64</b>
<b>Group 3: Oil Reference 0.2X</b>							
22	249.50	256.36	264.69	266.17	261.76	267.10	263.22
24	282.90	289.14	285.66	291.59	294.02	287.66	289.61
37	285.90	288.56	291.09	287.29	288.03	286.63	288.32
45 <sup>b</sup>	263.20	264.77	267.87	269.82	268.94	--	--
47	267.90	278.37	274.31	279.59	280.98	294.78	281.61
49 <sup>b</sup>	276.70	269.59	274.95	275.94	278.29	--	--
50	263.60	273.71	277.26	278.15	275.98	279.33	276.89
<b>Mean:</b>	<b>269.96</b>	<b>277.23</b>	<b>278.60</b>	<b>280.56</b>	<b>280.15</b>	<b>283.10</b>	<b>279.93</b>
<b>Group 4: Oil Reference 0.5X</b>							
14	285.10	288.96	278.02	282.48	269.93	294.77	282.83
21 <sup>b</sup>	269.30	279.29	276.86	277.89	281.79	--	--
23	279.40	292.15	288.49	292.02	290.48	296.23	291.87
33 <sup>b</sup>	257.50	264.16	260.28	251.14	262.09	--	--
39	277.70	279.84	282.00	293.87	289.06	298.82	288.72
43	277.50	280.31	286.13	280.38	280.95	277.93	281.14
53	267.40	264.80	275.43	281.09	282.84	291.15	279.06
<b>Mean:</b>	<b>277.42</b>	<b>281.21</b>	<b>282.01</b>	<b>285.97</b>	<b>282.65</b>	<b>291.78</b>	<b>284.72</b>
<b>Group 5: Oil Reference 0.8X</b>							
15	250.60	257.91	257.27	264.59	268.47	276.11	264.87
26	275.30	271.07	265.84	262.17	266.11	261.30	265.30
27	262.70	265.48	260.25	258.62	260.19	262.98	261.50
28 <sup>b</sup>	262.50	257.73	250.94	252.56	252.84	--	--
29	269.70	264.27	273.47	282.36	279.61	280.73	276.09
36	254.90	251.64	255.84	272.50	276.74	281.86	267.72
52 <sup>c</sup>	257.90	261.84	256.02	--	--	--	--
<b>Mean:</b>	<b>262.64</b>	<b>262.07</b>	<b>262.53</b>	<b>268.05</b>	<b>270.22</b>	<b>272.60</b>	<b>267.10</b>

**Table D-2. (cont.)**

Date Study Day	Body Weight (g)						Mean Body Weight (g)
	18-Jan -5	24-Jan 1	30-Jan 7	7-Feb 15	14-Feb 22	22-Feb 30	
<b>Group 6: Soil</b>							
30	265.30	279.34	282.45	292.53	296.60	294.65	289.11
41	265.70	274.73	282.27	291.34	286.97	288.25	284.71
42	261.00	259.19	265.70	276.95	283.14	280.78	273.15
48	259.10	257.16	263.06	258.96	259.30	257.50	259.20
51	282.20	256.15	273.55	277.99	277.72	276.55	272.39
<b>Mean:</b>	<b>266.66</b>	<b>265.31</b>	<b>273.41</b>	<b>279.55</b>	<b>280.75</b>	<b>279.55</b>	<b>275.71</b>

<sup>a</sup> Mean of body weights from study days 1, 7, 15, 22, and 30.

<sup>b</sup> To allow for gavage-related mortality, seven rats, rather than five, were included in each of the corn oil gavage groups during the compound administration phase of the study. This rat was randomly selected to be excluded from the final group used for tissue collection, and feed intake values for this animal are not included in the group means.

<sup>c</sup> This rat was euthanized before the end of the study. Feed intake values for this animal are not included in the group means.

**Table D-3. Rat necropsy liver and fat sample weights**

Rat #	Liver Weight (g)	Abdominal Fat Sample Weight (g)
<b>Group 1: Feed Control</b>		
17	10.87	2.85
18	10.08	5.02
20	11.38	3.62
44	10.50	5.58
46	8.92	4.23
<b>Gp 1 Mean</b>	<b>10.35</b>	<b>4.26</b>
<b>Group 2: Oil Control</b>		
32	8.10	2.99
35	9.27	3.15
38	10.61	3.70
40	8.09	4.76
54	9.63	5.04
<b>Gp 2 Mean</b>	<b>9.14</b>	<b>3.93</b>
<b>Group 3: Oil Reference 0.2X</b>		
22	8.45	5.21
24	8.91	4.64
37	9.77	4.08
47	10.31	3.84
50	8.89	4.44
<b>Gp 3 Mean</b>	<b>9.27</b>	<b>4.44</b>
<b>Group 4: Oil Reference 0.5X</b>		
14	10.59	6.83
23	10.19	4.55
39	9.93	4.79
43	8.54	3.57
53	12.23	5.26
<b>Gp 4 Mean</b>	<b>10.30</b>	<b>5.00</b>
<b>Group 5: Oil Reference 0.8X</b>		
15	10.19	4.16
26	8.73	3.56
27	8.63	3.29
29	9.13	4.26
36	10.03	4.19
<b>Gp 5 Mean</b>	<b>9.34</b>	<b>3.89</b>
<b>Group 6: Soil</b>		
30	10.30	4.00
41	9.10	5.48
42	9.48	3.96
48	8.41	3.38
51	9.13	2.85
<b>Gp 6 Mean</b>	<b>9.28</b>	<b>3.93</b>

**Notes:**

Liver was weighed, EROD/MROD sample cut out, remainder wrapped in foil and placed on dry ice.

For fat samples, samplers tried to get 4–5 g from same areas on all rats. Fat samples were weighed, wrapped in foil, and placed on dry ice

**Table D-4. Tissue concentrations, doses, and RBA calculations for the rat follow-up study**

Analyte	Tittabawassee River Soil (Group 6)											Using Terminal BW	
	Soil/ Diet Mean Conc. (pg/g)	Rat IDs	Total Feed Intake (g)	Mean BW <sup>c</sup> (g)	Terminal BW (g)	Using Mean BW			Total Dose (pg)	Liver Weight (g)	Liver Conc. (pg/g)	Fat Weight Fraction (wa) (unitless)	Fat Weight (g)
						Total Dose[bw] <sup>a</sup> (pg/g)	Avg. Daily Dose[bw] <sup>a</sup> (pg/g)	Avg. Daily Dose[bw] <sup>a</sup> S.D.					
2,3,7,8-TCDF	79.3	Grp 6 Mean	542.48	275.71	279.55	156	5.198	0.171	43,019		300		
1,2,3,7,8-PeCDF	49.5	Grp 6 Mean	542.48	275.71	279.55	97.4	3.245	0.107	26,853		230		
2,3,4,7,8-PeCDF	42.3	Grp 6 Mean	542.48	275.71	279.55	83.2	2.773	0.091	22,947		1,066		
1,2,3,4,7,8-HxCDF	33.4	Grp 6 Mean	542.48	275.71	279.55	65.7	2.189	0.072	18,119		575		
1,2,3,6,7,8-HxCDF	8.19	Grp 6 Mean	542.48	275.71	279.55	16.1	0.537	0.018	4,443		158		
2,3,7,8-TCDF	79.3	30	556.26	289.11	294.65	153	5.086		44,111	10.3	311	0.0753	22.18
1,2,3,7,8-PeCDF	49.5	30	556.26	289.11	294.65	95.2	3.175		27,535	10.3	238	0.0753	22.18
2,3,4,7,8-PeCDF	42.3	30	556.26	289.11	294.65	81.4	2.713		23,530	10.3	1,040	0.0753	22.18
1,2,3,4,7,8-HxCDF	33.4	30	556.26	289.11	294.65	64.3	2.142		18,579	10.3	554	0.0753	22.18
1,2,3,6,7,8-HxCDF	8.19	30	556.26	289.11	294.65	15.8	0.525		4,556	10.3	153	0.0753	22.18
2,3,7,8-TCDF	79.3	41	590.02	284.71	288.25	164	5.478		46,789	9.10	319	0.074	21.33
1,2,3,7,8-PeCDF	49.5	41	590.02	284.71	288.25	103	3.419		29,206	9.10	232	0.074	21.33
2,3,4,7,8-PeCDF	42.3	41	590.02	284.71	288.25	87.7	2.922		24,958	9.10	1,060	0.074	21.33
1,2,3,4,7,8-HxCDF	33.4	41	590.02	284.71	288.25	69.2	2.307		19,707	9.10	575	0.074	21.33
1,2,3,6,7,8-HxCDF	8.19	41	590.02	284.71	288.25	17.0	0.566		4,832	9.10	154	0.074	21.33
2,3,7,8-TCDF	79.3	42	537.79	273.15	280.78	156	5.204		42,647	9.48	258	0.0725	20.36
1,2,3,7,8-PeCDF	49.5	42	537.79	273.15	280.78	97.5	3.249		26,621	9.48	198	0.0725	20.36
2,3,4,7,8-PeCDF	42.3	42	537.79	273.15	280.78	83.3	2.776		22,749	9.48	1,000	0.0725	20.36
1,2,3,4,7,8-HxCDF	33.4	42	537.79	273.15	280.78	65.8	2.192		17,962	9.48	544	0.0725	20.36
1,2,3,6,7,8-HxCDF	8.19	42	537.79	273.15	280.78	16.1	0.537		4,405	9.48	151	0.0725	20.36
2,3,7,8-TCDF	79.3	48	493.76	259.20	257.50	151	5.035		39,155	8.41	325	0.0679	17.48
1,2,3,7,8-PeCDF	49.5	48	493.76	259.20	257.50	94.3	3.143		24,441	8.41	253	0.0679	17.48
2,3,4,7,8-PeCDF	42.3	48	493.76	259.20	257.50	80.6	2.686		20,886	8.41	1,180	0.0679	17.48
1,2,3,4,7,8-HxCDF	33.4	48	493.76	259.20	257.50	63.6	2.121		16,492	8.41	635	0.0679	17.48
1,2,3,6,7,8-HxCDF	8.19	48	493.76	259.20	257.50	15.6	0.520		4,044	8.41	178	0.0679	17.48
2,3,7,8-TCDF	79.3	51	534.55	272.39	276.55	156	5.187		42,390	9.13	287	0.0717	19.82
1,2,3,7,8-PeCDF	49.5	51	534.55	272.39	276.55	97.1	3.238		26,460	9.13	227	0.0717	19.82
2,3,4,7,8-PeCDF	42.3	51	534.55	272.39	276.55	83.0	2.767		22,611	9.13	1,050	0.0717	19.82
1,2,3,4,7,8-HxCDF	33.4	51	534.55	272.39	276.55	65.5	2.185		17,854	9.13	567	0.0717	19.82
1,2,3,6,7,8-HxCDF	8.19	51	534.55	272.39	276.55	16.1	0.536		4,378	9.13	156	0.0717	19.82

**Table D-4. (cont.)**

Analyte	Tittabawassee River Soil (Group 6)									Oil Reference 0.2X (Group 3)					
	Fat Conc. (pg/g)	Fraction Retained in Liver	Fraction Retained in Fat	Fraction Retained Liver+Fat	WHO	Liver TEQ (pg/g)	Liver TEQ SD	Oil Reference 0.2X Mean Conc. (ng/mL)	Total Gavage Volume (mL)	Mean BW <sup>c</sup> (g)					
	FR <sub>liver</sub> (unitless)	FR <sub>liver</sub> S.D.	FR <sub>fat</sub> (unitless)	FR <sub>fat</sub> S.D.	FR <sub>sum</sub> (unitless)	FR <sub>sum</sub> S.D.	TEF (unitless)	Group 3 Rat IDs							
2,3,7,8-TCDF	138	0.065	0.006	0.065	0.007	0.130	0.012	0.1	30.0	2.76	0.268	Grp 3 Mean	30	279.93	
1,2,3,7,8-PeCDF	58.4	0.079	0.008	0.044	0.003	0.123	0.011	0.05	11.5	1.01	0.185	Grp 3 Mean	30	279.93	
2,3,4,7,8-PeCDF	55.7	0.432	0.035	0.049	0.004	0.481	0.037	0.5	533	33.8	0.166	Grp 3 Mean	30	279.93	
1,2,3,4,7,8-HxCDF	37.5	0.295	0.022	0.042	0.005	0.337	0.026	0.1	57.5	3.56	0.122	Grp 3 Mean	30	279.93	
1,2,3,6,7,8-HxCDF	10.5	0.331	0.030	0.048	0.007	0.379	0.035	0.1	15.8	1.11	0.036	Grp 3 Mean	30	279.93	
2,3,7,8-TCDF	149	0.073		0.075		0.148		0.1	31.1		0.268		22	30	263.22
1,2,3,7,8-PeCDF	62.0	0.089		0.050		0.139		0.05	11.9		0.185		22	30	263.22
2,3,4,7,8-PeCDF	57.7	0.455		0.054		0.510		0.5	520		0.166		22	30	263.22
1,2,3,4,7,8-HxCDF	39.8	0.307		0.048		0.355		0.1	55.4		0.122		22	30	263.22
1,2,3,6,7,8-HxCDF	10.8 J	0.346		0.053		0.398		0.1	15.3		0.036		22	30	263.22
2,3,7,8-TCDF	150	0.062		0.068		0.130		0.1	31.9		0.268		24	30	289.61
1,2,3,7,8-PeCDF	58.1	0.072		0.042		0.115		0.05	11.6		0.185		24	30	289.61
2,3,4,7,8-PeCDF	51.6	0.386		0.044		0.431		0.5	530		0.166		24	30	289.61
1,2,3,4,7,8-HxCDF	31.1	0.266		0.034		0.299		0.1	57.5		0.122		24	30	289.61
1,2,3,6,7,8-HxCDF	8.00 J	0.290		0.035		0.325		0.1	15.4		0.036		24	30	289.61
2,3,7,8-TCDF	126	0.057		0.060		0.118		0.1	25.8		0.268		37	30	288.32
1,2,3,7,8-PeCDF	56.5	0.071		0.043		0.114		0.05	9.90		0.185		37	30	288.32
2,3,4,7,8-PeCDF	54.7	0.417		0.049		0.466		0.5	500		0.166		37	30	288.32
1,2,3,4,7,8-HxCDF	38.3	0.287		0.043		0.331		0.1	54.4		0.122		37	30	288.32
1,2,3,6,7,8-HxCDF	11.0 J	0.325		0.051		0.376		0.1	15.1		0.036		37	30	288.32
2,3,7,8-TCDF	142	0.070		0.063		0.133		0.1	32.5		0.268		47	30	281.61
1,2,3,7,8-PeCDF	60.1	0.087		0.043		0.130		0.05	12.7		0.185		47	30	281.61
2,3,4,7,8-PeCDF	58.7	0.475		0.049		0.524		0.5	590		0.166		47	30	281.61
1,2,3,4,7,8-HxCDF	40.6	0.324		0.043		0.367		0.1	63.5		0.122		47	30	281.61
1,2,3,6,7,8-HxCDF	11.4 J	0.370		0.049		0.419		0.1	17.8		0.036		47	30	281.61
2,3,7,8-TCDF	123	0.062		0.058		0.119		0.1	28.7		0.268		50	30	276.89
1,2,3,7,8-PeCDF	55.4	0.078		0.042		0.120		0.05	11.4		0.185		50	30	276.89
2,3,4,7,8-PeCDF	56.0	0.424		0.049		0.473		0.5	525		0.166		50	30	276.89
1,2,3,4,7,8-HxCDF	37.8	0.290		0.042		0.332		0.1	56.7		0.122		50	30	276.89
1,2,3,6,7,8-HxCDF	11.5 J	0.325		0.052		0.377		0.1	15.6		0.036		50	30	276.89

Table D-4. (cont.)

Analyte	Terminal BW (g)	Oil Reference 0.2X (Group 3)											
		Using Mean BW				Using Terminal BW				Fraction Retained in Liver		Fraction Retained in Fat	
		Total Dose[bw] <sup>b</sup> (pg/g)	Avg. Daily Dose[bw] <sup>a</sup> (pg/g)	Avg. Daily Dose[bw] <sup>a</sup> S.D.	Total Dose (pg)	Liver Weight (g)	Liver Conc. (pg/g)	Fat Weight (wa) (unitless)	Fat Weight (g)	Fat Conc. (pg/g)	FR <sub>liver</sub> (unitless)	FR <sub>liver</sub> S.D.	FR <sub>fat</sub> (unitless)
													FR <sub>fat</sub> S.D.
2,3,7,8-TCDF	283.10	28.7	0.959	0.038	8,040	103				60.5	0.118	0.012	0.155
1,2,3,7,8-PeCDF	283.10	19.8	0.662	0.026	5,550	74.2				24.7	0.123	0.009	0.091
2,3,4,7,8-PeCDF	283.10	17.8	0.594	0.023	4,980	358				24.8	0.656	0.010	0.100
1,2,3,4,7,8-HxCDF	283.10	13.1	0.436	0.017	3,660	175				15.1	0.435	0.016	0.083
1,2,3,6,7,8-HxCDF	283.10	3.86	0.129	0.005	1,080	52.6				4.36	0.446	0.009	0.081
2,3,7,8-TCDF	267.10	30.5	1.018		8,040	8.45	122	0.0698	18.64	63.4	0.128		0.147
1,2,3,7,8-PeCDF	267.10	21.1	0.703		5,550	8.45	86.8	0.0698	18.64	25.9	0.132		0.087
2,3,4,7,8-PeCDF	267.10	18.9	0.631		4,980	8.45	394	0.0698	18.64	23.6	0.669		0.088
1,2,3,4,7,8-HxCDF	267.10	13.9	0.463		3,660	8.45	195	0.0698	18.64	14.8	0.450		0.075
1,2,3,6,7,8-HxCDF	267.10	4.10	0.137		1,080	8.45	58.4	0.0698	18.64	4.33 J	0.457		0.075
2,3,7,8-TCDF	287.66	27.8	0.925		8,040	8.91	116	0.0739	21.25	58.9	0.129		0.156
1,2,3,7,8-PeCDF	287.66	19.2	0.639		5,550	8.91	79.9	0.0739	21.25	22.9	0.128		0.088
2,3,4,7,8-PeCDF	287.66	17.2	0.573		4,980	8.91	362	0.0739	21.25	21.9	0.648		0.093
1,2,3,4,7,8-HxCDF	287.66	12.6	0.421		3,660	8.91	177	0.0739	21.25	13.0 J	0.431		0.075
1,2,3,6,7,8-HxCDF	287.66	3.73	0.124		1,080	8.91	53.6	0.0739	21.25	4.03 J	0.442		0.079
2,3,7,8-TCDF	286.63	27.9	0.930		8,040	9.77	99.1	0.0737	21.12	59.3	0.120		0.156
1,2,3,7,8-PeCDF	286.63	19.2	0.642		5,550	9.77	70.1	0.0737	21.12	25.5	0.123		0.097
2,3,4,7,8-PeCDF	286.63	17.3	0.576		4,980	9.77	351	0.0737	21.12	27.1	0.689		0.115
1,2,3,4,7,8-HxCDF	286.63	12.7	0.423		3,660	9.77	174	0.0737	21.12	16.3	0.464		0.094
1,2,3,6,7,8-HxCDF	286.63	3.75	0.125		1,080	9.77	51.3	0.0737	21.12	4.89 J	0.464		0.096
2,3,7,8-TCDF	294.78	28.6	0.952		8,040	10.31	84.7	0.0753	22.20	56.9	0.109		0.157
1,2,3,7,8-PeCDF	294.78	19.7	0.657		5,550	10.31	60.8	0.0753	22.20	23.3	0.113		0.093
2,3,4,7,8-PeCDF	294.78	17.7	0.589		4,980	10.31	319	0.0753	22.20	24.9	0.660		0.111
1,2,3,4,7,8-HxCDF	294.78	13.0	0.433		3,660	10.31	158	0.0753	22.20	15.9	0.445		0.096
1,2,3,6,7,8-HxCDF	294.78	3.84	0.128		1,080	10.31	47	0.0753	22.20	4.34 J	0.449		0.089
2,3,7,8-TCDF	279.33	29.0	0.968		8,040	8.89	95.1	0.0722	20.18	64.0	0.105		0.161
1,2,3,7,8-PeCDF	279.33	20.0	0.668		5,550	8.89	73.2	0.0722	20.18	26.1	0.117		0.095
2,3,4,7,8-PeCDF	279.33	18.0	0.600		4,980	8.89	363	0.0722	20.18	26.3	0.648		0.107
1,2,3,4,7,8-HxCDF	279.33	13.2	0.441		3,660	8.89	171	0.0722	20.18	15.3	0.415		0.084
1,2,3,6,7,8-HxCDF	279.33	3.90	0.130		1,080	8.89	52.9	0.0722	20.18	4.23 J	0.435		0.079

**Table D-4. (cont.)**

Analyte	Oil Reference 0.2X (Group 3)				Oil Reference 0.5X (Group 4)										
	Fraction Retained Liver+Fat		WHO TEF (unitless)	Liver TEQ (pg/g)	Oil Reference 0.5X			Total Gavage Volume (mL)	Mean BW <sup>c</sup> (g)	Terminal BW (g)	Using Mean BW			Total Dose (pg)	Liver Weight (g)
	FR <sub>sum</sub> (unitless)	FR <sub>sum</sub> S.D.			Mean Conc. (ng/mL)	Group 4 Rat IDs	Total Dose[bw] <sup>b</sup> (pg/g)				Avg. Daily Dose[bw] <sup>a</sup> (pg/g)	Avg. Daily Dose[bw] <sup>a</sup> S.D.			
2,3,7,8-TCDF	0.273	0.009	0.1	10.4	0.673	Grp 4 Mean	30	284.72	291.78	70.9	2.364	0.044	20,190		
1,2,3,7,8-PeCDF	0.213	0.006	0.05	3.76	0.452	Grp 4 Mean	30	284.72	291.78	47.6	1.588	0.030	13,560		
2,3,4,7,8-PeCDF	0.756	0.012	0.5	180	0.422	Grp 4 Mean	30	284.72	291.78	44.5	1.483	0.028	12,660		
1,2,3,4,7,8-HxCDF	0.518	0.019	0.1	17.5	0.307	Grp 4 Mean	30	284.72	291.78	32.3	1.079	0.020	9,210		
1,2,3,6,7,8-HxCDF	0.526	0.010	0.1	5.30	0.0892	Grp 4 Mean	30	284.72	291.78	9.40	0.313	0.006	2,676		
2,3,7,8-TCDF	0.275		0.1	12.2	0.673	14	30	282.83	294.77	71.4	2.380		20,190	10.59	
1,2,3,7,8-PeCDF	0.219		0.05	4.34	0.452	14	30	282.83	294.77	47.9	1.598		13,560	10.59	
2,3,4,7,8-PeCDF	0.757		0.5	197	0.422	14	30	282.83	294.77	44.8	1.492		12,660	10.59	
1,2,3,4,7,8-HxCDF	0.526		0.1	19.5	0.307	14	30	282.83	294.77	32.6	1.085		9,210	10.59	
1,2,3,6,7,8-HxCDF	0.532		0.1	5.84	0.0892	14	30	282.83	294.77	9.46	0.315		2,676	10.59	
2,3,7,8-TCDF	0.284		0.1	11.6	0.673	23	30	291.87	296.23	69.2	2.306		20,190	10.19	
1,2,3,7,8-PeCDF	0.216		0.05	4.00	0.452	23	30	291.87	296.23	46.5	1.549		13,560	10.19	
2,3,4,7,8-PeCDF	0.741		0.5	181	0.422	23	30	291.87	296.23	43.4	1.446		12,660	10.19	
1,2,3,4,7,8-HxCDF	0.506		0.1	17.7	0.307	23	30	291.87	296.23	31.6	1.052		9,210	10.19	
1,2,3,6,7,8-HxCDF	0.522		0.1	5.36	0.0892	23	30	291.87	296.23	9.17	0.306		2,676	10.19	
2,3,7,8-TCDF	0.276		0.1	9.91	0.673	39	30	288.72	298.82	69.9	2.331		20,190	9.93	
1,2,3,7,8-PeCDF	0.220		0.05	3.51	0.452	39	30	288.72	298.82	47.0	1.566		13,560	9.93	
2,3,4,7,8-PeCDF	0.804		0.5	176	0.422	39	30	288.72	298.82	43.8	1.462		12,660	9.93	
1,2,3,4,7,8-HxCDF	0.559		0.1	17.4	0.307	39	30	288.72	298.82	31.9	1.063		9,210	9.93	
1,2,3,6,7,8-HxCDF	0.560		0.1	5.13	0.0892	39	30	288.72	298.82	9.27	0.309		2,676	9.93	
2,3,7,8-TCDF	0.266		0.1	8.47	0.673	43	30	281.14	277.93	71.8	2.394		20,190	8.54	
1,2,3,7,8-PeCDF	0.206		0.05	3.04	0.452	43	30	281.14	277.93	48.2	1.608		13,560	8.54	
2,3,4,7,8-PeCDF	0.771		0.5	160	0.422	43	30	281.14	277.93	45.0	1.501		12,660	8.54	
1,2,3,4,7,8-HxCDF	0.542		0.1	15.8	0.307	43	30	281.14	277.93	32.8	1.092		9,210	8.54	
1,2,3,6,7,8-HxCDF	0.538		0.1	4.70	0.0892	43	30	281.14	277.93	9.52	0.317		2,676	8.54	
2,3,7,8-TCDF	0.266		0.1	9.51	0.673	53	30	279.06	291.15	72.4	2.412		20,190	12.23	
1,2,3,7,8-PeCDF	0.212		0.05	3.66	0.452	53	30	279.06	291.15	48.6	1.620		13,560	12.23	
2,3,4,7,8-PeCDF	0.755		0.5	182	0.422	53	30	279.06	291.15	45.4	1.512		12,660	12.23	
1,2,3,4,7,8-HxCDF	0.500		0.1	17.1	0.307	53	30	279.06	291.15	33.0	1.100		9,210	12.23	
1,2,3,6,7,8-HxCDF	0.514		0.1	5.29	0.0892	53	30	279.06	291.15	9.59	0.320		2,676	12.23	

**Table D-4. (cont.)**

Analyte	Oil Reference 0.5X (Group 4)												
	Using Terminal BW				Fraction Retained in Liver			Fraction Retained in Fat		Fraction Retained Liver+Fat		WHO TEF (unitless)	Liver TEQ (pg/g)
	Liver Conc. (pg/g)	Fat Weight Fraction (wa)	Fat Weight (g)	Fat Conc. (pg/g)	FR <sub>liver</sub> (unitless)	FR <sub>liver</sub> S.D.	FR <sub>fat</sub> (unitless)	FR <sub>fat</sub> S.D.	FR <sub>sum</sub> (unitless)	FR <sub>sum</sub> S.D.			
2,3,7,8-TCDF	206			118	0.109	0.016	0.130	0.014	0.239	0.030	0.1		
1,2,3,7,8-PeCDF	176			55.5	0.137	0.017	0.089	0.005	0.226	0.021	0.05		
2,3,4,7,8-PeCDF	830			53.4	0.681	0.077	0.091	0.005	0.772	0.080	0.5		
1,2,3,4,7,8-HxCDF	415			33.1	0.470	0.064	0.077	0.005	0.547	0.066	0.1		
1,2,3,6,7,8-HxCDF	125			9.17	0.494	0.067	0.073	0.003	0.568	0.067	0.1		
2,3,7,8-TCDF	196	0.0753	22.20	113	0.103		0.124		0.227		0.1	19.6	
1,2,3,7,8-PeCDF	177	0.0753	22.20	54.5	0.138		0.089		0.227		0.05	8.85	
2,3,4,7,8-PeCDF	744	0.0753	22.20	47.7	0.622		0.084		0.706		0.5	372	
1,2,3,4,7,8-HxCDF	370	0.0753	22.20	29.1	0.425		0.070		0.496		0.1	37.0	
1,2,3,6,7,8-HxCDF	115	0.0753	22.20	8.36 J	0.455		0.069		0.524		0.1	11.5	
2,3,7,8-TCDF	208	0.0756	22.39	116	0.105		0.129		0.234		0.1	20.8	
1,2,3,7,8-PeCDF	165	0.0756	22.39	51.4	0.124		0.085		0.209		0.05	8.25	
2,3,4,7,8-PeCDF	838	0.0756	22.39	52.7	0.675		0.093		0.768		0.5	419	
1,2,3,4,7,8-HxCDF	411	0.0756	22.39	31.7	0.455		0.077		0.532		0.1	41.1	
1,2,3,6,7,8-HxCDF	123	0.0756	22.39	8.74 J	0.468		0.073		0.542		0.1	12.3	
2,3,7,8-TCDF	182	0.0761	22.74	106	0.090		0.119		0.209		0.1	18.2	
1,2,3,7,8-PeCDF	164	0.0761	22.74	53.0	0.120		0.089		0.209		0.05	8.2	
2,3,4,7,8-PeCDF	807	0.0761	22.74	51.9	0.633		0.093		0.726		0.5	404	
1,2,3,4,7,8-HxCDF	401	0.0761	22.74	33.6	0.432		0.083		0.515		0.1	40.1	
1,2,3,6,7,8-HxCDF	113	0.0761	22.74	9.32 J	0.419		0.079		0.499		0.1	11.3	
2,3,7,8-TCDF	227	0.0719	20.00	117	0.096		0.116		0.212		0.1	22.7	
1,2,3,7,8-PeCDF	198	0.0719	20.00	58.8	0.125		0.087		0.211		0.05	9.90	
2,3,4,7,8-PeCDF	941	0.0719	20.00	59.6	0.635		0.094		0.729		0.5	471	
1,2,3,4,7,8-HxCDF	470	0.0719	20.00	37.9	0.436		0.082		0.518		0.1	47.0	
1,2,3,6,7,8-HxCDF	144	0.0719	20.00	10.4 J	0.460		0.078		0.537		0.1	14.4	
2,3,7,8-TCDF	219	0.0746	21.71	139	0.133		0.149		0.282		0.1	21.9	
1,2,3,7,8-PeCDF	177	0.0746	21.71	59.9	0.160		0.096		0.256		0.05	8.85	
2,3,4,7,8-PeCDF	819	0.0746	21.71	55.2	0.791		0.095		0.886		0.5	410	
1,2,3,4,7,8-HxCDF	425	0.0746	21.71	33.3	0.564		0.079		0.643		0.1	42.5	
1,2,3,6,7,8-HxCDF	130	0.0746	21.71	9.05 J	0.594		0.073		0.668		0.1	13.0	

**Table D-4. (cont.)**

Analyte	Oil Reference 0.8X (Group 5)												Using Terminal BW		
	Oil Reference 0.8X			Total Gavage			Using Mean BW			Fat Weight Fraction					
	Mean Conc. (ng/mL)	Group 5 Rat IDs	Total Volume (mL)	Mean BW <sup>c</sup> (g)	Terminal BW (g)	Total Dose[bw] <sup>b</sup> (pg/g)	Avg. Daily Dose[bw] <sup>a</sup> (pg/g)	Avg. Daily Dose[bw] <sup>a</sup> S.D.	Total Dose (pg)	Liver Weight (g)	Liver Conc. (pg/g)	Fat Weight (g)	Fat Conc. (pg/g)		
	0.8X														
2,3,7,8-TCDF	1.023	Grp 5 Mean	30	267.09	272.60	115	3.831	0.078	30,690		357				154
1,2,3,7,8-PeCDF	0.707	Grp 5 Mean	30	267.09	272.60	79.4	2.648	0.054	21,210		325				81.0
2,3,4,7,8-PeCDF	0.642	Grp 5 Mean	30	267.09	272.60	72.1	2.404	0.049	19,260		1,614				80.1
1,2,3,4,7,8-HxCDF	0.469	Grp 5 Mean	30	267.09	272.60	52.7	1.757	0.036	14,070		807				50.2
1,2,3,6,7,8-HxCDF	0.136	Grp 5 Mean	30	267.09	272.60	15.3	0.509	0.010	4,080		247				13.8
2,3,7,8-TCDF	1.023	15	30	264.87	276.11	116	3.862		30,690	10.19	327	0.0716	19.77		146
1,2,3,7,8-PeCDF	0.707	15	30	264.87	276.11	80.1	2.669		21,210	10.19	295	0.0716	19.77		74.3
2,3,4,7,8-PeCDF	0.642	15	30	264.87	276.11	72.7	2.424		19,260	10.19	1,450	0.0716	19.77		74.7
1,2,3,4,7,8-HxCDF	0.469	15	30	264.87	276.11	53.1	1.771		14,070	10.19	734	0.0716	19.77		47.5
1,2,3,6,7,8-HxCDF	0.136	15	30	264.87	276.11	15.4	0.513		4,080	10.19	228	0.0716	19.77		12.8 J
2,3,7,8-TCDF	1.023	26	30	265.30	261.30	116	3.856		30,690	8.73	353	0.0686	17.94		143
1,2,3,7,8-PeCDF	0.707	26	30	265.30	261.30	79.9	2.665		21,210	8.73	328	0.0686	17.94		81.2
2,3,4,7,8-PeCDF	0.642	26	30	265.30	261.30	72.6	2.420		19,260	8.73	1,690	0.0686	17.94		85.5
1,2,3,4,7,8-HxCDF	0.469	26	30	265.30	261.30	53.0	1.768		14,070	8.73	814	0.0686	17.94		53.6
1,2,3,6,7,8-HxCDF	0.136	26	30	265.30	261.30	15.4	0.513		4,080	8.73	256	0.0686	17.94		13.4 J
2,3,7,8-TCDF	1.023	27	30	261.50	262.98	117	3.912		30,690	8.63	372	0.069	18.14		154
1,2,3,7,8-PeCDF	0.707	27	30	261.50	262.98	81.1	2.704		21,210	8.63	344	0.069	18.14		84.8
2,3,4,7,8-PeCDF	0.642	27	30	261.50	262.98	73.7	2.455		19,260	8.63	1,750	0.069	18.14		84.5
1,2,3,4,7,8-HxCDF	0.469	27	30	261.50	262.98	53.8	1.793		14,070	8.63	880	0.069	18.14		55.3
1,2,3,6,7,8-HxCDF	0.136	27	30	261.50	262.98	15.6	0.520		4,080	8.63	268	0.069	18.14		17.2
2,3,7,8-TCDF	1.023	29	30	276.09	280.73	111	3.705		30,690	9.13	377	0.0725	20.35		166
1,2,3,7,8-PeCDF	0.707	29	30	276.09	280.73	76.8	2.561		21,210	9.13	355	0.0725	20.35		86.1
2,3,4,7,8-PeCDF	0.642	29	30	276.09	280.73	69.8	2.325		19,260	9.13	1,630	0.0725	20.35		79.9
1,2,3,4,7,8-HxCDF	0.469	29	30	276.09	280.73	51.0	1.699		14,070	9.13	834	0.0725	20.35		48.9
1,2,3,6,7,8-HxCDF	0.136	29	30	276.09	280.73	14.8	0.493		4,080	9.13	247	0.0725	20.35		13.3 J
2,3,7,8-TCDF	1.023	36	30	267.72	281.86	115	3.821		30,690	10.03	355	0.0727	20.50		162
1,2,3,7,8-PeCDF	0.707	36	30	267.72	281.86	79.2	2.641		21,210	10.03	305	0.0727	20.50		78.5
2,3,4,7,8-PeCDF	0.642	36	30	267.72	281.86	71.9	2.398		19,260	10.03	1,550	0.0727	20.50		76.1
1,2,3,4,7,8-HxCDF	0.469	36	30	267.72	281.86	52.6	1.752		14,070	10.03	773	0.0727	20.50		45.8
1,2,3,6,7,8-HxCDF	0.136	36	30	267.72	281.86	15.2	0.508		4,080	10.03	235	0.0727	20.50		12.2 J

**Table D-4. (cont.)**

Analyte	Oil Reference 0.8X (Group 5)								
	Fraction Retained in Liver	FR <sub>liver</sub> (unitless)	FR <sub>liver</sub> S.D.	Fraction Retained in Fat	FR <sub>fat</sub> (unitless)	FR <sub>fat</sub> S.D.	Fraction Retained Liver+Fat	WHO TEF (unitless)	Liver TEQ (pg/g)
2,3,7,8-TCDF	0.109	0.007		0.099	0.013		0.208	0.019	0.1
1,2,3,7,8-PeCDF	0.143	0.007		0.074	0.007		0.218	0.014	0.05
2,3,4,7,8-PeCDF	0.778	0.020		0.080	0.003		0.859	0.021	0.5
1,2,3,4,7,8-HxCDF	0.532	0.020		0.068	0.002		0.600	0.020	0.1
1,2,3,6,7,8-HxCDF	0.562	0.014		0.062	0.003		0.624	0.014	0.1
2,3,7,8-TCDF	0.109			0.094			0.203		0.1
1,2,3,7,8-PeCDF	0.142			0.069			0.211		0.05
2,3,4,7,8-PeCDF	0.767			0.077			0.844		0.5
1,2,3,4,7,8-HxCDF	0.532			0.067			0.598		0.1
1,2,3,6,7,8-HxCDF	0.569			0.062			0.631		22.8
2,3,7,8-TCDF	0.100			0.084			0.184		35.3
1,2,3,7,8-PeCDF	0.135			0.069			0.204		16.4
2,3,4,7,8-PeCDF	0.766			0.080			0.846		845
1,2,3,4,7,8-HxCDF	0.505			0.068			0.573		81.4
1,2,3,6,7,8-HxCDF	0.548			0.059			0.607		25.6
2,3,7,8-TCDF	0.105			0.091			0.196		37.2
1,2,3,7,8-PeCDF	0.140			0.073			0.212		17.2
2,3,4,7,8-PeCDF	0.784			0.080			0.864		875
1,2,3,4,7,8-HxCDF	0.540			0.071			0.611		88
1,2,3,6,7,8-HxCDF	0.567			0.076			0.643		26.8
2,3,7,8-TCDF	0.112			0.110			0.222		37.7
1,2,3,7,8-PeCDF	0.153			0.083			0.235		17.75
2,3,4,7,8-PeCDF	0.773			0.084			0.857		815
1,2,3,4,7,8-HxCDF	0.541			0.071			0.612		83.4
1,2,3,6,7,8-HxCDF	0.553			0.066			0.619		24.7
2,3,7,8-TCDF	0.116			0.108			0.224		35.5
1,2,3,7,8-PeCDF	0.144			0.076			0.220		15.25
2,3,4,7,8-PeCDF	0.807			0.081			0.888		775
1,2,3,4,7,8-HxCDF	0.551			0.067			0.618		77.3
1,2,3,6,7,8-HxCDF	0.578			0.061			0.639		23.5

**Note:** J – The amount detected is below the Lower Calibration Limit of the instrument.

<sup>a</sup> Mean of body weights from study days 1, 7, 15, 22, and 30

**Table D-5. Tissue concentrations in control group composite samples**

Analyte	Group 1 Composite Feed Control		Group 2 Composite Oil Control	
	Liver (pg/g)	Fat (pg/g)	Liver (pg/g)	Fat (pg/g)
2,3,7,8-TCDD	0.172 <i>U</i> <sup>a</sup>	0.298 <i>J</i>	0.193 <i>U</i> <sup>a</sup>	0.283 <i>U</i> <sup>a</sup>
1,2,3,7,8-PeCDD	0.768 <i>J</i>	0.642 <i>J</i>	0.824 <i>J</i>	0.518 <i>J</i>
1,2,3,4,7,8-HxCDD	0.358 <i>J</i>	0.232 <i>U</i>	0.396 <i>J</i>	0.200 <i>U</i>
1,2,3,6,7,8-HxCDD	1.04 <i>J</i>	0.365 <i>J</i>	1.31 <i>J</i>	0.326 <i>J</i>
1,2,3,7,8,9-HxCDD	0.554 <i>J</i>	0.208 <i>J</i>	0.606 <i>J</i>	0.206 <i>J</i>
1,2,3,4,6,7,8-HpCDD	5.24	0.832 <i>J</i>	6.54	0.836 <i>J</i>
OCDD	17.6 <i>B</i>	2.56 <i>J,B</i>	23.6 <i>B</i>	2.45 <i>J,B</i>
2,3,7,8-TCDF	0.724 <i>J</i>	0.539 <i>J</i>	0.728 <i>J</i>	0.472 <i>J</i>
1,2,3,7,8-PeCDF	0.127 <i>U</i> <sup>a</sup>	0.234 <i>U</i>	0.166 <i>U</i> <sup>a</sup>	0.260 <i>U</i>
2,3,4,7,8-PeCDF	1.13 <i>J</i>	0.235 <i>U</i>	1.41 <i>J</i>	0.274 <i>U</i>
1,2,3,4,7,8-HxCDF	0.375 <i>J</i>	0.0810 <i>U</i>	0.534 <i>J</i>	0.0665 <i>U</i>
1,2,3,6,7,8-HxCDF	0.374 <i>J</i>	0.0778 <i>U</i>	0.374 <i>J</i>	0.0613 <i>U</i>
2,3,4,6,7,8-HxCDF	0.277 <i>J</i>	0.0868 <i>U</i>	0.282 <i>J</i>	0.0726 <i>U</i>
1,2,3,7,8,9-HxCDF	0.0838 <i>U</i>	0.132 <i>U</i>	0.0693 <i>U</i>	0.105 <i>U</i>
1,2,3,4,6,7,8-HpCDF	1.85 <i>J</i>	0.278 <i>U</i>	2.83 <i>J</i>	0.242 <i>J</i>
1,2,3,4,7,8,9-HpCDF	0.194 <i>J</i>	0.349 <i>U</i>	0.270 <i>J</i>	0.241 <i>U</i>
OCDF	1.34 <i>J</i>	0.483 <i>U</i>	2.42 <i>J</i>	0.463 <i>U</i>
<b>TEQ<sup>b</sup></b>	<b>1.96</b>	<b>1.26</b>	<b>2.26</b>	<b>1.12</b>

**Note:** *B* – This compound was also detected in the method blank.

*J* – The amount detected is below the Lower Calibration Limit of the instrument.

*U* – Not detected; value represents the sample-specific detection limit, unless noted otherwise.

<sup>a</sup> Nondetect reported to the EMPC (Estimated Maximum Possible Concentration).

<sup>b</sup> Toxicity equivalence concentration (TEQ) calculated using the World Health Organization (WHO) toxicity equivalence factors.

**Table D-6. Rat liver microsomal EROD activities**

Entrix Sample ID	Exponent Group	Exponent Rat ID	Statistics			Group Statistics	
			Mean	SD	CV (%)	Mean	SD
S17	Gp-1	17	31.5	0.43	1.37	33.2	6.13
S18	Gp-1	18	25.4	0.82	3.21		
S20	Gp-1	20	32.3	0.38	1.18		
S44	Gp-1	44	34.1	0.40	1.17		
S46	Gp-1	46	42.4	2.29	5.40		
S32	Gp-2	32	33.5	1.04	3.10	40.6	7.15
S35	Gp-2	35	33.4	0.88	2.64		
S38	Gp-2	38	44.2	0.45	1.01		
S40	Gp-2	40	49.9	0.85	1.69		
S54	Gp-2	54	42.2	0.88	2.10		
S22	Gp-3	22	42.3	1.25	2.95	53.6	8.07
S24	Gp-3	24	49.3	1.38	2.79		
S37	Gp-3	37	54.3	0.52	0.95		
S47	Gp-3	47	61.2	1.99	3.25		
S50	Gp-3	50	61.2	0.99	1.62		
S14	Gp-4	14	73.3	2.52	3.43	80.8	17.9
S23	Gp-4	23	83.6	4.53	5.42		
S39	Gp-4	39	109.9	8.26	7.52		
S43	Gp-4	43	74.7	2.03	2.71		
S53	Gp-4	53	62.6	1.91	3.05		
S15	Gp-5	15	115.1	4.84	4.21	106.4	16.6
S26	Gp-5	26	119.8	4.04	3.37		
S27	Gp-5	27	116.8	6.76	5.79		
S29	Gp-5	29	100.1	3.54	3.53		
S36	Gp-5	36	80.0	3.55	4.43		
S30	Gp-6	30	82.0	1.89	2.31	110.1	24.1
S41	Gp-6	41	118.2	4.67	3.95		
S42	Gp-6	42	142.9	8.34	5.84		
S48	Gp-6	48	116.3	0.73	0.63		
S51	Gp-6	51	91.1	1.00	1.09		

**Note:** SD – standard deviation

CV – coefficient of variability

**Table D-7. Rat liver microsomal MROD activities**

Entrix Sample ID	Exponent Group	Exponent Rat ID	Statistics			Group Statistics	
			Mean	SD	CV (%)	Mean	SD
S17	Gp-1	17	26.9	2.26	8.18	25.7	2.2
S18	Gp-1	18	27.7	1.03	3.76		
S20	Gp-1	20	26.6	1.08	3.87		
S44	Gp-1	44	22.0	1.05	4.89		
S46	Gp-1	46	25.3	1.05	2.89		
S32	Gp-2	32	29.3	1.18	4.09	26.9	1.8
S35	Gp-2	35	26.5	2.16	8.14		
S38	Gp-2	38	24.4	0.30	1.09		
S40	Gp-2	40	26.9	1.63	6.22		
S54	Gp-2	54	27.5	1.43	5.12		
S22	Gp-3	22	36.3	1.56	4.56	33.3	3.6
S24	Gp-3	24	36.1	2.27	6.42		
S37	Gp-3	37	34.8	2.47	7.26		
S47	Gp-3	47	31.5	1.87	5.94		
S50	Gp-3	50	28.0	0.97	3.50		
S14	Gp-4	14	31.3	1.30	4.29	34.9	10.0
S23	Gp-4	23	51.2	0.30	0.38		
S39	Gp-4	39	36.5	0.58	1.56		
S43	Gp-4	43	24.8	1.36	5.52		
S53	Gp-4	53	30.9	1.76	5.65		
S15	Gp-5	15	52.0	2.78	5.24	41.9	7.4
S26	Gp-5	26	36.6	2.40	6.58		
S27	Gp-5	27	39.3	1.32	3.54		
S29	Gp-5	29	47.0	3.59	7.68		
S36	Gp-5	36	34.5	2.62	7.61		
S30	Gp-6	30	33.6	2.67	7.97	34.5	5.5
S41	Gp-6	41	39.0	1.02	2.50		
S42	Gp-6	42	30.1	1.43	4.70		
S48	Gp-6	48	41.2	1.93	4.68		
S51	Gp-6	51	28.7	1.37	4.86		

**Note:** SD – standard deviation

CV – coefficient of variability

**Table D-8. Summary of relative bioavailability estimates for the follow-up rat study**

Analyte	Fraction of Administered Dose Retained									RBA Estimates					
	Liver			Adipose			Liver + Adipose			Liver		Adipose		Liver + Adipose	
	Mean	S.D.	C.V.	Mean	S.D.	C.V.	Mean	S.D.	C.V.	Mean	C.V.	Mean	C.V.	Mean	C.V.
<b>Tittabawassee River Floodplain Soil (Group 6)</b>															
2,3,7,8-TCDF	0.065	0.006	10%	0.065	0.007	11%	0.130	0.012	9%						
1,2,3,7,8-PeCDF	0.079	0.008	11%	0.044	0.003	8%	0.123	0.011	9%						
2,3,4,7,8-PeCDF	0.432	0.035	8%	0.049	0.004	7%	0.481	0.037	8%						
1,2,3,4,7,8-HxCDF	0.295	0.022	7%	0.042	0.005	12%	0.337	0.026	8%						
1,2,3,6,7,8-HxCDF	0.331	0.030	9%	0.048	0.007	15%	0.379	0.035	9%						
<b>Oil Reference 0.2X (Group 3)</b>															
2,3,7,8-TCDF	0.118	0.012	11%	0.155	0.006	4%	0.273	0.009	3%	55%	14%	42%	11%	48%	10%
1,2,3,7,8-PeCDF	0.123	0.009	7%	0.091	0.004	4%	0.213	0.006	3%	65%	13%	49%	9%	58%	9%
2,3,4,7,8-PeCDF	0.656	0.010	2%	0.100	0.011	11%	0.756	0.012	2%	66%	8%	49%	13%	64%	8%
1,2,3,4,7,8-HxCDF	0.435	0.016	4%	0.083	0.010	12%	0.518	0.019	4%	68%	8%	51%	17%	65%	9%
1,2,3,6,7,8-HxCDF	0.446	0.009	2%	0.081	0.006	8%	0.526	0.010	2%	74%	9%	60%	17%	72%	9%
<b>Oil Reference 0.5X (Group 4)</b>															
2,3,7,8-TCDF	0.109	0.016	15%	0.130	0.014	11%	0.239	0.030	13%	59%	18%	50%	15%	54%	16%
1,2,3,7,8-PeCDF	0.137	0.017	12%	0.089	0.005	5%	0.226	0.021	10%	58%	16%	49%	9%	55%	13%
2,3,4,7,8-PeCDF	0.681	0.077	11%	0.091	0.005	6%	0.772	0.080	10%	63%	14%	54%	9%	62%	13%
1,2,3,4,7,8-HxCDF	0.470	0.064	14%	0.077	0.005	7%	0.547	0.066	12%	63%	16%	54%	14%	62%	14%
1,2,3,6,7,8-HxCDF	0.494	0.067	14%	0.073	0.003	5%	0.568	0.067	12%	67%	16%	65%	16%	67%	15%
<b>Oil Reference 0.8X (Group 5)</b>															
2,3,7,8-TCDF	0.109	0.007	6%	0.099	0.013	13%	0.208	0.019	9%	59%	11%	66%	17%	62%	13%
1,2,3,7,8-PeCDF	0.143	0.007	5%	0.074	0.007	9%	0.218	0.014	6%	55%	12%	59%	12%	57%	11%
2,3,4,7,8-PeCDF	0.778	0.020	3%	0.080	0.003	4%	0.859	0.021	2%	55%	8%	61%	8%	56%	8%
1,2,3,4,7,8-HxCDF	0.532	0.020	4%	0.068	0.002	3%	0.600	0.020	3%	55%	8%	62%	12%	56%	8%
1,2,3,6,7,8-HxCDF	0.562	0.014	2%	0.062	0.003	5%	0.624	0.014	2%	59%	9%	77%	16%	61%	10%

**Notes:** RBA – relative bioavailability, calculated as: Fraction of administered dose retained<sub>test material</sub> / Fraction of administered dose retained<sub>reference material</sub>

S.D. – standard deviation

C.V. – coefficient of variability

For fraction of administered dose retained: C.V. = Standard Deviation / Mean

For RBA estimates: C.V. = ( CV<sub>soil</sub><sup>2</sup> + CV<sub>reference</sub><sup>2</sup> )<sup>0.5</sup>